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The OIL WEEKLY

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THE WEEK'S NEWS

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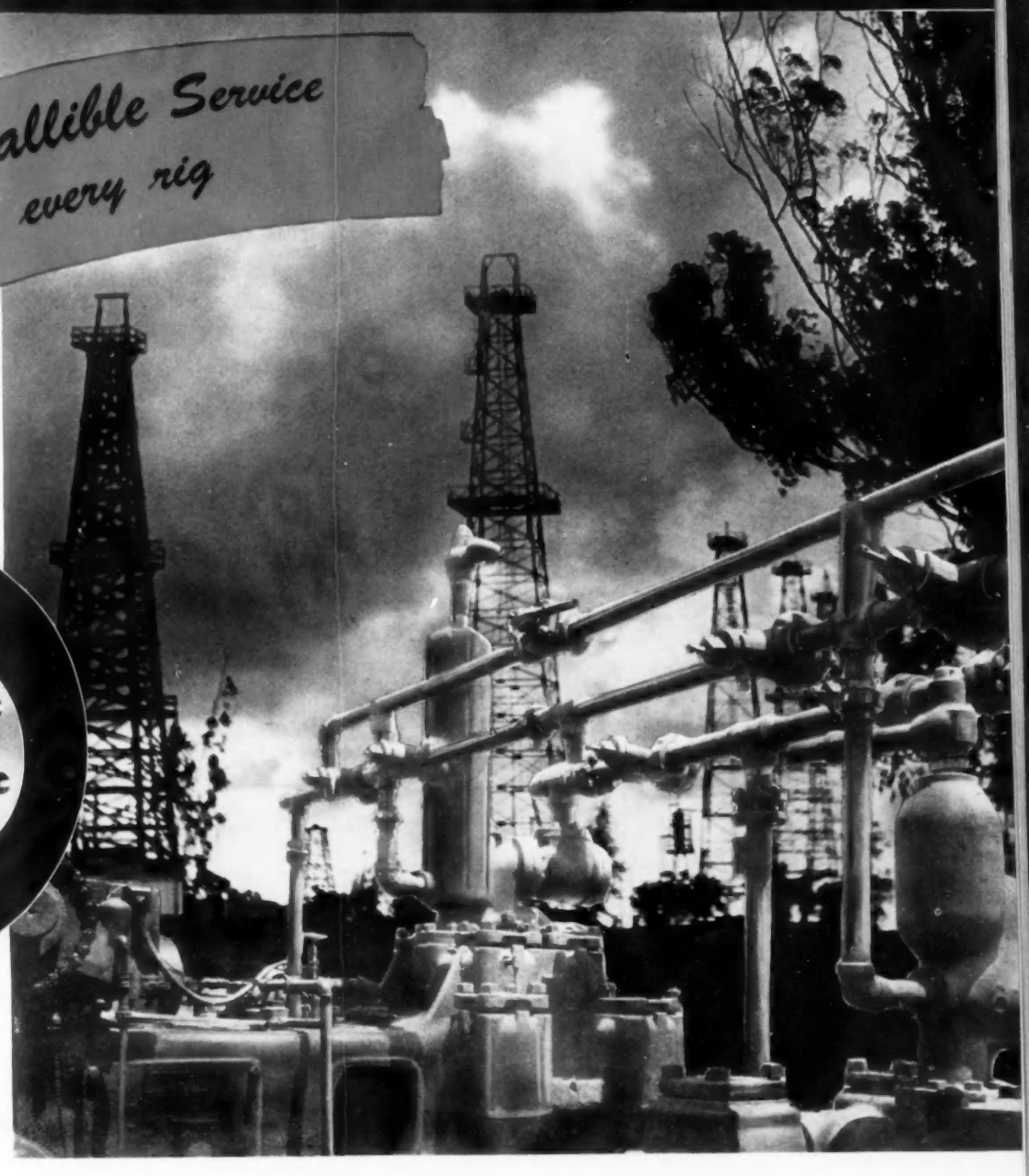

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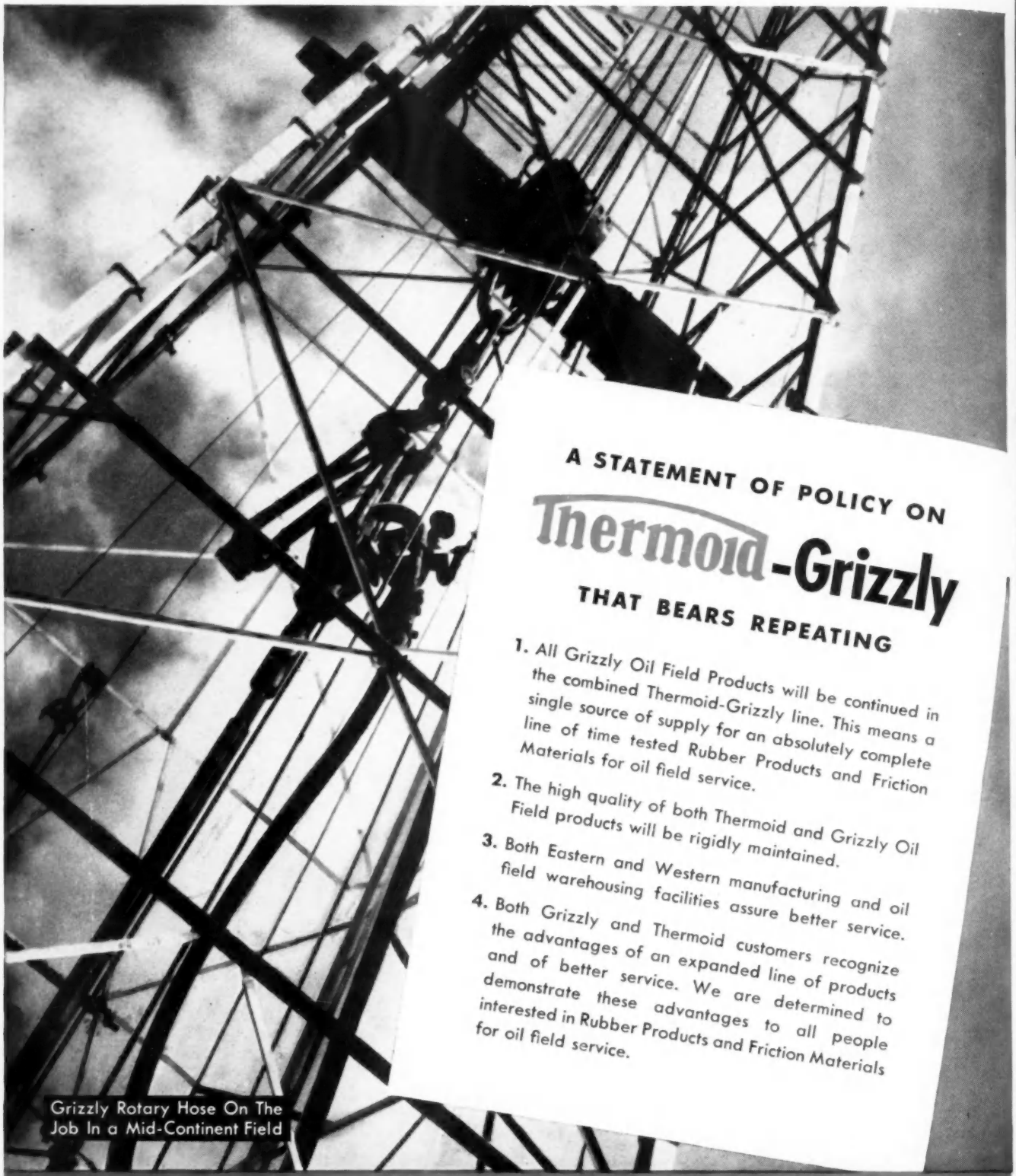

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LOOKING AHEAD
... with the Editor

TO AN unparalleled extent, oil companies today are having to depend more and more upon their salvage and maintenance departments in order to maintain even a semblance of balance between a diminishing equipment supply on the one hand and pressure of increased field activities on the other. One of the most serious of the problems existing in this maintenance activity is that of providing an unbroken supply of reconditioned valves, those ranging in all sizes from ¼- to 12-inch. In addition, such valves must be overhauled not with the idea of "just getting by," but with the aim of turning them out in such a condition that they can be depended upon to give the same service and provide the same safety factors as were provided in the manufacturer's original specifications.

How one major company has successfully overcome this supply bottleneck is to be the subject of an illustrated article to appear in an early issue of THE OIL WEEKLY. It will describe in detail various ingenious devices and equipment built up largely from salvaged and other miscellaneous materials. An entire shop building has been devoted to this valve maintenance program, and shop personnel has behind it many years of experience and considerable experimenting with such maintenance equipment. The speed and efficiency with which stacks of worn and broken valve bodies and miscellaneous parts are converted into practically new and serviceable valves is contributing much to the economy of operations of the several departments which today are practically dependent upon this division of the company for their valve replacements.

THE OIL WEEKLY

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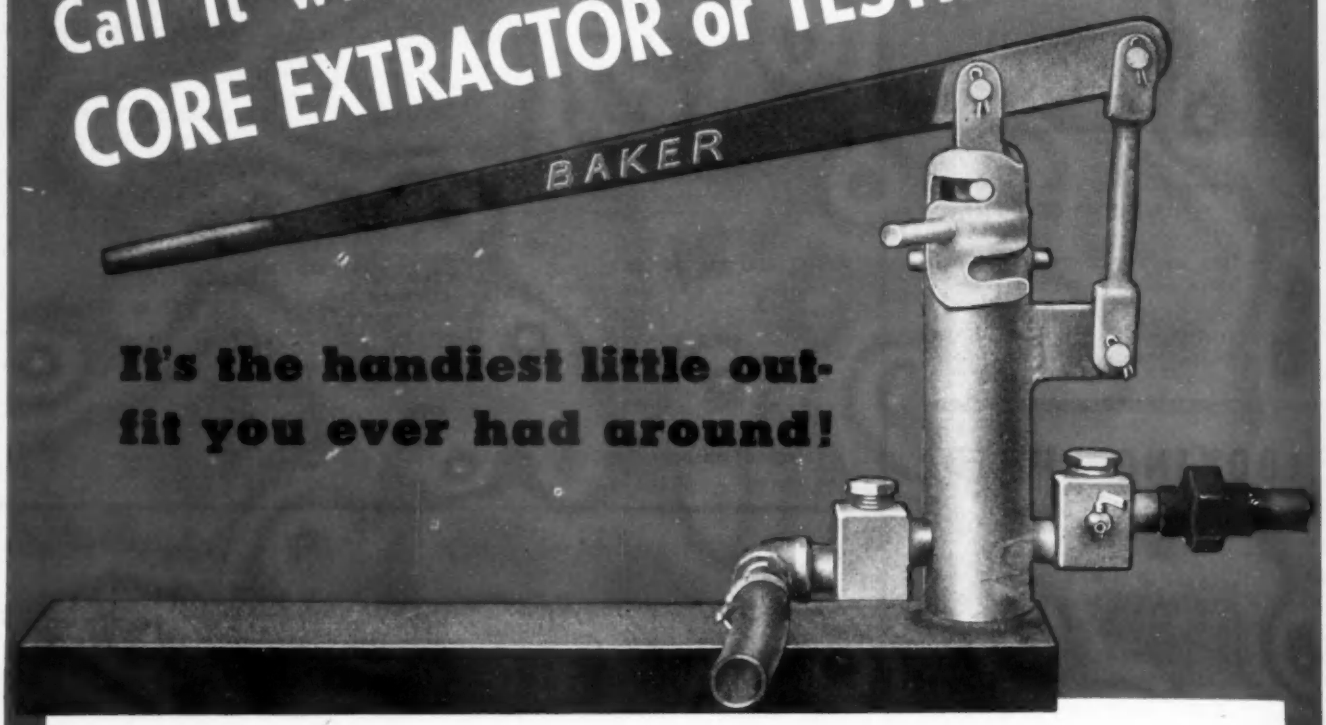
Call it what you like
CORE EXTRACTOR or TESTING PUMP



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Originally designed for removing cores from core barrels, many other oil field and shop uses have been discovered and it is today widely used as a testing pump; for removing plungers from insert liner oil well pumps; for testing valves, fittings, casing and tubing; and for setting Baker Cement Retainers when mud or cement pumps are not available.

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CORE EXTRACTOR AND TESTING PUMP PRODUCT NO. 540

The Outlook

Russia's anxiety to have friendly governments all around her and to dominate eastern Europe will have its effect on the San Francisco conference and may eventually have repercussions on American oil interests in Rumania.

* * * *

Strategy against Japan calls for continued intensive use of jelly-gasoline incendiaries which may become the industry's greatest single contribution to victory. Tested out on Berlin, they are expected to wreck both Jap war production and morale perhaps before Nips can switch to Asiatic mainland for last-ditch fight.

* * * *

Russia may become an important buyer of oil field and refinery equipment as soon as U. S. manufacturing permits. Congress will be asked to approve open, heavy, long-term credits to help finance purchases.

* * * *

U.S. Senate soon will consider a plan to provide $500 million federal funds to be matched by state and local money for a nation-wide airport system.

* * * *

Secretary of Commerce Wallace's plans include getting Dr. Julius Klein back in charge of the bureau of foreign and domestic commerce and making the department a potent force in export-import field.

* * * *

Administration leaders would abolish war controls quickly as possible because they see enough headaches in reconversion without complicating them by threats of peacetime industry control.

* * * *

Military production cutbacks will outpace expansion of civilian output, expected to accelerate gradually as materials become available. Real test of administration reconversion policy: End of Jap war when military production will halt overnight.

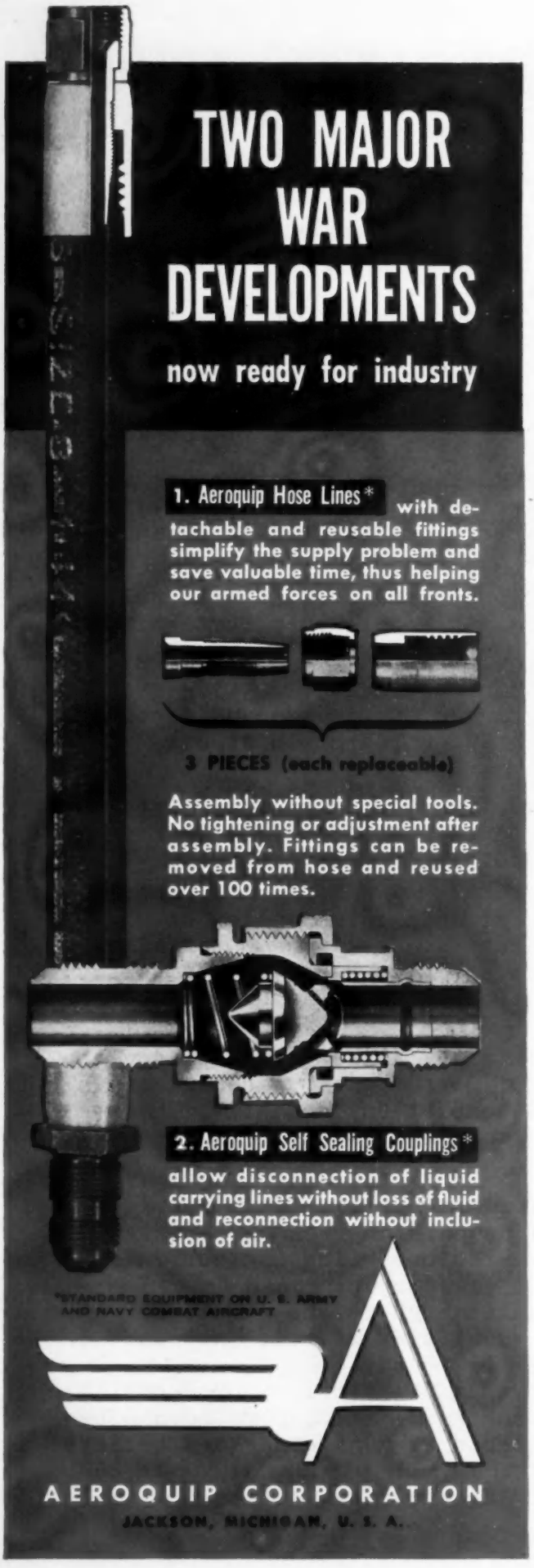
* * * *

The year's drilling will approximate PAW's 27,000 wells with wildcats short of the projected 5000. So far this year wildcatting has been on the basis of about 4000 completions annually, inadequate profit incentive rather than war shortages being the main deterrent.

* * * *

Low-octane fuel may propel postwar airplanes. Many plane designers see the gas turbine or jet propulsion as having a brighter aviation future than the traditional reciprocating engine. This would reverse oil's present trend of manufacturing and force reconversion of big wartime-constructed high-octane gasoline plants. Consumption of lead, large quantities of which are used in making high-octane gasolines also would drop.

The American farmer, heavy consumer of petroleum products, will buy even more when in postwar the farm will become mechanized as never before. Added will be the airplane. Some observers believe rural areas will take 60 percent of the LIGHT planes, these to be used for planting, crop dusting, flying the range, etc.



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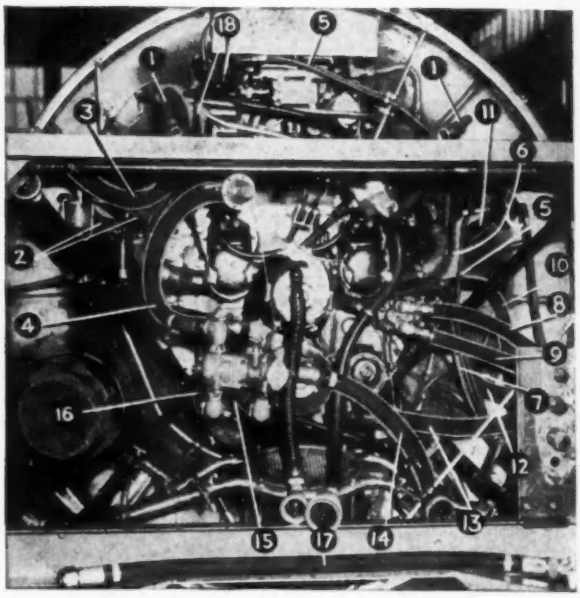
Engine-change time shortened 30 minutes . . . 40 man-hours saved per overhaul.

With a 5,061-hour operational record revealing new gains in time saved and fire hazards reduced, installation of Aeroquip Flexible Hose Lines in place of rigid power plant plumbing lines on Douglas DC-3's by Braniff Airways marks a forward step in maintenance efficiency.



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9. *Hydraulic Pressure*
10. *Fuel Cross Feed*
11. *Fuel Line*
12. *Fuel Suction*
13. *Vac. Suction*
14. *Oil Line to Cooler*
15. *Oil Line Out from Engine*
16. *Oil Line Into Engine*
17. *Oil Line Return to Tank from Cooler*
18. *Primer Line*

Braniff officials report engine-change time reduced by a half-hour, and 40 man-hours saved per engine overhaul, with Aeroquip Hose Assemblies and Self-Sealing Couplings. Further time saving is reported on regular service checks due to cleanliness of power plant sections, absence of leaks minimizing wash-down work.

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STOCK SIMPLIFIED

With Aeroquip's quickly removable, reusable and interchangeable fittings, all parts can be replaced individually and new hose lines cut to any lengths and assembled on the spot without special tools. This feature has proved of great value in military use, where these lines are "AN" standard.

WEIGHT SAVED

Aeroquip supplies all these advantages at no sacrifice in weight; in fact, savings totalled 4 lbs. 9 oz. and 4 lbs. 11 oz. for left and right engines.

The Changing Panorama

Intent of Congress On Petroleum Prices

IN DISCUSSING his bill, House Resolution 2940, to raise the price of crude oil, Congressman Lyle H. Boren, of Oklahoma, put his finger on the situation that the oil industry has repeatedly brought to the attention of the Office of Price Administration.

"I offered this bill," the Congressman said, "to seek correction of an outstanding injustice that has been perpetrated and maintained by the agency to which control of prices has been entrusted. This agency has not been guided by the intent of Congress in this matter, but has substituted for that intent a philosophy of its own whose origin I cannot attempt to explain except to say that it grew in part out of the incompetency of the men who were given authority over the matter of oil prices. They have never gone much further than to look at the earnings statements of the largest oil companies which are doing very well and that the thousands who produce crude oil exclusively are to be judged by the same standards as those who make profits from the operation of pipe lines, refineries and marketing facilities."

The standardization methods used by OPA have worked untold injustice not only in the oil industry, but in other fields as well, rent controls for instance. Under the shelter of a somewhat nebulous term "prevention of inflation" various rackets have developed and are still growing in this country, and are being stimulated by the regulations of OPA. Of course such was never the intent of the Congress, as Boren says, but isn't it time that something actually be done about it?

Precision Control Aids Dependability

PRECISION control of manufacturing processes perfected during the war likely will result in greater dependability of many products when they are turned to civilian use again. In the manufacture of steel, for instance, uniform thickness of the sheet is of utmost importance. A new development permits measurements of a continuously moving white-hot sheet coming from a rilling mill at a speed of 20 miles an hour. Measurements can be taken at any instant by means of X-rays. With an X-ray machine below the steel and an X-ray intensity meter above, the thickness of the sheet can be recorded as desired.

☆

Complete mining, in which the petroleum-bearing rock is brought to the surface, crushed, and the petroleum recovered, may not be far distant.

—Mineral Industries,
The Pennsylvania State College.

Our foreign oil policy will find its level in whatever pattern we create for American foreign policy itself.

—U. S. Foreign Oil Policy,
World Oil Series, Volume II.

Venezuela's Role

INDICATIVE of the role which Venezuela can be expected to play in petroleum activities as soon as the war is over, is the fact that the Venezuelan government granted concessions covering 7,180,870 acres during 1944. A great part of these concessions comprised exploration privileges granted to companies new in Venezuela or not previously producing oil there on a large scale.

Long considered primarily a source of heavy crude oils best suited to meet the demand for heavy fuel oils, Venezuela is now in position to also supply medium and light crudes. When world demand swings back to where it was before World War II, Venezuela will undobutedly hold a most important position in supplying the types of crude needed, at a price which is competitive with crudes coming from other large producing areas such as may be expected from the Middle East.

Teamwork Era for Congress-Business

THERE is considerable basis for the belief that business will have a more favorable reception in Congress than in recent years, and with Congress expected to wield a more important influence on the affairs of the nation under President Truman, this can become a significant development.

There is every reason for Congress to turn to business for counsel at this time. Besides the Reciprocal Trade Agreements Act, now before Congress, there soon will be considerable activity in the tax field. Such questions as reconversion, postwar employment, contract settlements, temporary postwar financing, removal of government controls also are pressing forward now that European hostilities have ceased. All these problems will require the most careful study, and Congress will need and welcome sound help and advice.

However, business must do more than merely hope that it will have better government relations. Business cannot expect Congress to come running to it for assistance, it must help its own cause along. The immediate future affords industry an excellent opportunity to improve the attitude of government with business, and it should not toss away this chance.

Therefore, business should take advantage of every opportunity to discuss their affairs with senators and representatives.

Action by Congress Is Only Insurance

DEFINITE and positive action by Congress is the only possible insurance the oil industry has for a permanent clarification of the intangible drilling expense regulations of the Revenue Act.

The United States Fifth Circuit Court of Appeals in its latest dictum, following arguments for rehearing of the F.H.E. Oil Company case, delivered a decision that was confined strictly to the matters at issue. The "side excursion," which threw such a fright into the oil industry and which had an immediate effect upon the important matter of exploratory drilling, was not pursued further.

But the court had not changed its mind. In its May 4 decision following plea for rehearing, it said: "While we see no fault in our previous reasoning, and think the former opinion a right one to have been rendered 20 years ago, we find it unnecessary to consider so broadly the validity of the opinion, and now confine our decision, as the majority of the Tax Court did, to a holding that wells drilled to get an oil property, or to get a better and more extensive interest in it, are so clearly capital investments in that property that no part of their cost can be called an expense of business."

House Concurrent Resolution 50, which is designed to remove existing doubt and confusion, and to eliminate uncertainty as to the question of the producers' right to charge intangible drilling cost to the expense of finding and producing oil and gas, has been introduced in Congress and its passage would close the door to future decisions by the courts. The oil industry strongly favors its passage.

Diesel Fuel Prices Higher for Postwar

POSTWAR prices of diesel fuels and lubricants are likely to be higher according to W. M. Holaday and W. S. Mount, of Socony-Vacuum Oil Company, New York. Appearing before the Diesel-Fuels & Lubricants Meeting of SAE in St. Louis, recently, they explained that the growing use of mobile diesels calls for storage and delivery facilities throughout the country, and the increasing volume is likely to rob diesel fuels of their prewar "free rides in the barges, tanks, pipe lines, and trucks of the heating oil or industrial fuel oil distributing systems."

Growing competition in the middle-range hydrocarbons, the source of diesel oils, is a warning to diesel users that they can expect to pay at least what diesel fuels are worth as cracking stocks.

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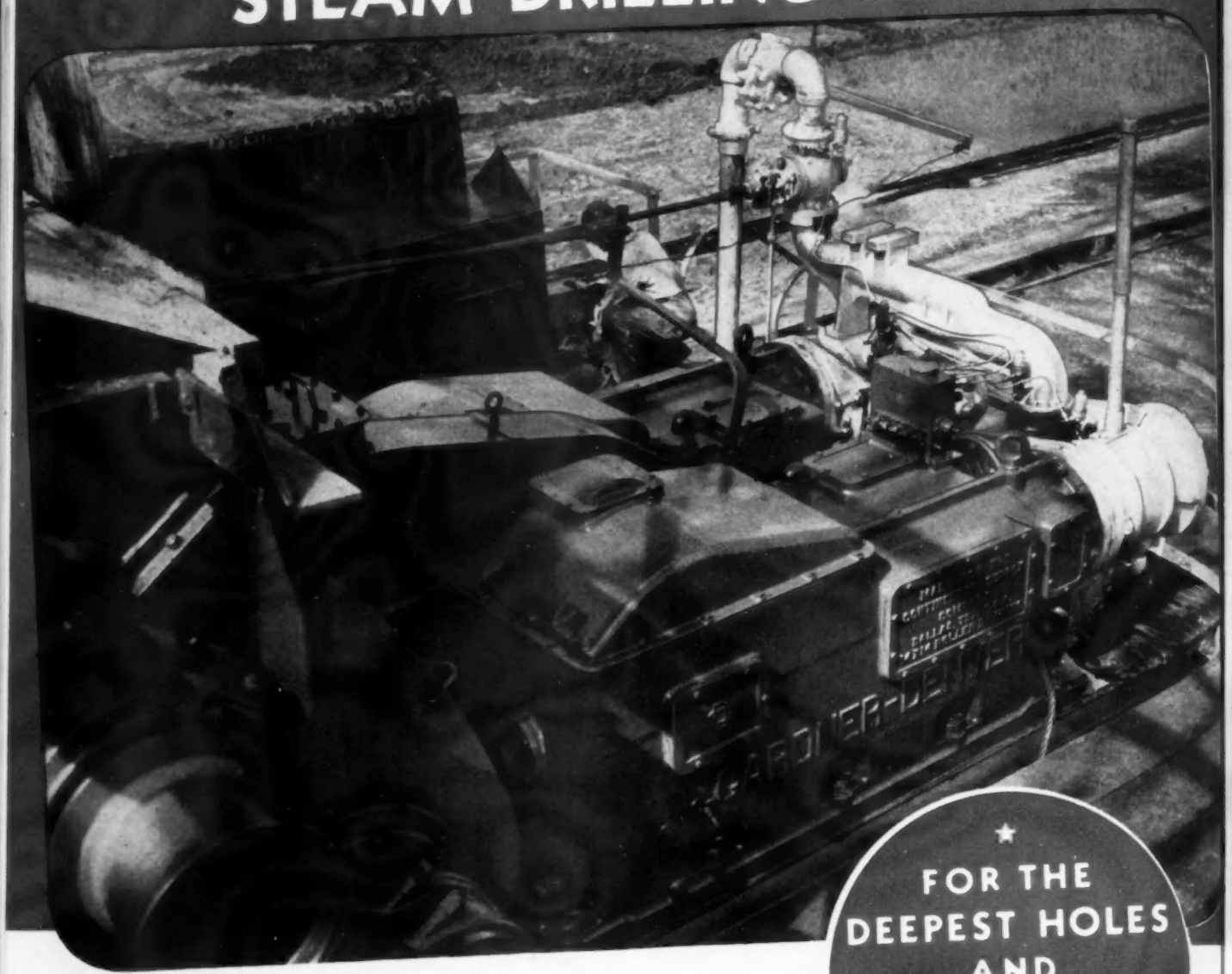

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CONTINENTAL

Serving the Oil and Gas Industries

The Week's News

A LENGTHY investigation of conditions in the oil industry by the Special Senate Committee investigating petroleum resources was launched May 17 with hearings on legislation to require the registration of all cartel agreements with the Department of Justice. Normally, a specific bill of the type might have had no place in hearings on oil, but it so happened that it was sponsored by Senator Joseph C. O'Mahoney of Wyoming, who is chairman of the committee. O'Mahoney told the industry it had not been picked out as engaged in any worse practices than any other industry, but because it is global in nature. Wendell Berge reviewed the Standard Oil Company (New Jersey)-I. G. Faben coalition, pointed out its dangers and political implications. Story below.

PIWC Meets, Hears About Pact—The Petroleum Industry War Council, urged to seek light on prospects for the immediate future because of the failure of the military to give definite figures on their needs as changed by the end of the war in Europe, surveyed the Anglo-American petroleum agreement situation again, and learned that the anti-trust provision has been dropped, to be incorporated, instead, in legislation which will be required to make the treaty operative after its consummation. Page 43.

Fear Questionnaire Deadline—Questionnaires sent out by OPA to producers to develop costs of production are coming back so slowly that oilmen watching the situation fear that charges may be leveled that the operators are not interested, satisfied with their present situation and future prospects. June 1 is the deadline.

Synthetic Rubber Prospect—Apprehensions that Secretary of Commerce Wallace's proposal that the synthetic rubber industry be liquidated after the war might be adopted by the administration faded with a forecast by S. T. Crossland, executive vice president of Rubber Reserve Company, that government-owned synthetic rubber plants will have to be kept in operation for some time even after the liberation of the natural rubber areas in the Far East. Page 46.

Civilian Gasoline Allotment—The AAA voiced sentiments widely held that somebody, somewhere, is trying to hold back the additional gasoline rations that should be made possible by the end of fighting in Europe, wiring Mobilization Director Vinson that "some real down-to-earth explaining" is due as to why only one hundred thousand to two hundred thousand barrels of products a day will be saved, and calling for a prompt determination of what is to be made available. Page 45.

New Oil Production Depth—Shell Oil Company's Smith-State 1, at Weeks Island, near New Iberia, Louisiana, was perforated for completion at 13,505-20 feet and flowed 140 barrels of 44.9-gravity distillate daily for the world's deepest producing record. Previously this record was held by Union Producing Company and Fohs Oil Company's Buckley-Bourg 2, Terrebone Parish, Louisiana, completed through perforations at 13,498-503 feet. Page 94.

Germany Army Zone Restrictions—With foreign business in hands of a special unit of the military government, it may be years before American concerns can operate freely in the U. S. "zone." British, Russia, France likely will impose similar restrictions in their "zones." Page 78.

Tidelands Leasing Problem—California oil men are looking to the Senate investigation committee to develop a solution to the tidelands leasing problem which is headed either for the courts or Congress. Page 46.

Russia Buys Drilling Rigs—An order, not lend-lease, has been placed by the Soviet purchasing agency with a Tulsa company for $1 million worth of portable drilling rigs. Page 43.

Texas-Mexico Pipe Line—FPC denied authorization of delivery into Monterrey, Mexico, by Reynosa Pipe Line Company of 60 million cubic feet daily of Texas natural gas. Page 78.

IPAA Executive Committee—Inconclusive returns on how to obtain higher stripper-well prices made it necessary for the executive committee of IPAA, meeting in Washington last week, to delay a decision. The fall meeting is scheduled in Tulsa. Page 48.

Record Production Again—United States production for the third successive week established a record high, the daily average for the week ended May 19 being 4,869,100 barrels. Page 47.

Senate Oil Investigation Under Way With Testimony on Cartel Measures

No stigma attaches to the petroleum industry in its selection as the first to be studied in connection with legislation designed to outlaw postwar international commercial arrangements such as the much-discussed Standard Oil-I. G. Farbenindustrie contracts, oil men gathered in the caucus room of the Senate Office Building where assured May 17 by Chairman Joseph C. O'Mahoney of Wyoming at the opening of hearings by the Special Committee Investigating Petroleum Resources.

There was no thought, O'Mahoney said, that the oil industry is given to following practices that ought to be condemned, any more than any other industry. It was selected, he explained, because it is of global proportions.

A large number of oil men, in Washington for PIWC and IPAA meetings, were in attendance as the hearings opened. Behind the committee table, O'Mahoney was flanked by Attorney General Francis Biddle, Federal Trade Commission General Counsel William Kelley, Assistant Secretary of State William L. Clayton, Assistant Attorney General Wendell Berge and Secretary of the Interior Ickes.

In an opening statement, O'Mahoney declared that the time has come to decide whether the country will have free enterprise or control of business and industry by government. During the war the tendency has been toward managed society, he pointed out, and already in various parts of the world there is talk of reviving the cartel system.

For that reason, he said, he was opening the oil investigation with a discussion of his bill to require the registration of cartel agreements with the Department of Justice. That bill, he explained, is not for the purpose of legalizing cartel monopolies," but solely to make it possible for the people of America to know precisely what kinds of international agreements are to be made in the field of commerce with foreign nations by domestic corporations."

Clayton's Testimony

Testimony of Biddle and Clayton showed that while the former believes the legislation will strengthen the anti-trust laws, the latter, while agreeing with that view, sees in it a vehicle to support a State Department plan to obtain a worldwide agreement prohibiting the participation of commercial enterprises in contracts and combinations which restrain international trade, to be administered through an international office for business practices which it is hoped to tie into the economic and social council of the United Nations' security organization. Biddle disclosed that many cartel arrangements disrupted during

the war are now being resumed, meetings having been held, plans laid and, in some cases, agreements already entered into.

"As to some of these agreements," he said, "my department will have something to say before long."

Biddle absolved American parties to prewar cartel agreements from any charge of planning to thwart the development of American foreign trade or to build up the industries of the future enemies of this country, and said that in most cases they entered into such arrangements unknowing of the dangers.

"There should have been some compulsion for making public the agreement which existed between an American firm and a Japanese company whereby, as late as 1939, the American company felt obligated to turn over to the Japanese some of the secrets and the industrial know-how for making aviation fuel," Biddle said. "Today we know of this agreement pursuant to which an official of the American company later wrote, 'the information given to the Japanese representatives was as complete, if not more complete, than any information on these processes which we have supplied to anyone.' An American Company which enters into such an agreement should be entitled to say that it hid nothing and that it let the American public know."

"More Important Than Treaties"

The bill, Biddle said, envisages no change in the principle of free and competitive enterprise, gives no government agency the right to pass upon the contracts which are filed or to grant exemptions from the anti-trust laws, and is neither a cartel immunity or a cartel control measure. Many of the arrangements which would have to be registered, he said, "are more important than treaties publicly debated and approved or disapproved in the Senate."

Flatly declaring that cartels serve no useful purpose and that European experience with them has been "both expensive and unhappy," Clayton indicated that the State Department sees in the O'Mahoney bill a means of dealing effectively with private barriers to international trade to supplement the department's reciprocal trade agreements designed to eliminate governmental barriers.

"A cartel is a kind of treaty of alliance between economic rivals," Clayton said.

Berge Ties In Oil

For the first time, the bill was tied directly to the oil industry May 18, when Assistant Attorney General Berge outlined the political implications of cartel activity, pointing out that oil and rubber are basic materials necessary to any industrial community and that the nature of modern warfare and industrial life is such that both have political and military as well as economic aspects.

"The discovery in 1926 that petroleum could be made from Germany's plentiful coal was a political event of the first magnitude," Berge declared. "That synthetic rubber became a reality in Germany shortly afterward served to magnify the shock.

"The petroleum industry, dominated in this country by Standard Oil Company (New Jersey) was shaken at its very foundation.

"Standard Oil was worried about its monopoly position. The discovery threatened competition and Standard Oil met the threat."

To do this, he continued, Standard Oil and I. G. Farben made a "series of treaties" preserving the position of the parties in the fields which they respectively dominated.

"Competition between I. G. Farben and Standard Oil was eliminated," Berge said. "And the technology of chemistry and petroleum was made part of their feudal preserve. The economic effect was the maintenance of monopoly.

"Political Implications"

"Stated in a more detailed way, Standard was given the world right on the oil process, while I. G. Farben was given the chemical business of the world, but there was one exception. I. G. Farben was given the right to engage in the oil business in Germany, but Standard Oil could engage in the chemical business in the United States only as a junior partner of I. G. The political implications of this are clear. Germany could not afford, considering her own aims, to permit any outsider to control within her own borders as important a development to her national life as the production of oil from coal.

"But when Standard Oil gave up its rights in the chemical field, including those in the United States, the repercussions were to be felt in the United States a decade later."

Included in the chemical field, Berge related, was buna synthetic rubber which, under the agreements, was a German-controlled monopoly, and when the war broke out in September, 1939, the Germans had not permitted it to be manufactured here; we had no experience or information or know-how and we had not obtained permission from Germany to produce it. While of equal importance, he said, the fact that the United States government had no knowledge of these facts, when corporations outside the I. G. Farben-Standard Oil orbit (Goodyear and Goodrich) attempted to manufacture, they were confronted with "the combined strength, wealth and power of the private coalition," he continued, and only a few weeks before Pearl Harbor infringement suits were threatened.

"Thus," Berge said, "not only did Standard Oil agree with I. G. Farben that the latter should control the exploitation of synthetic rubber, but cooperated in preventing any one else from producing on its own. Standard Oil received little, if any, information on synthetic rubber from I. G. Farben.

Mechanism Said Needed

"The ambiguous position in which Standard found itself arises from the fact that Standard never considered that it was making foreign policy, or took into account the political implications of its acts," Berge explained.

"We neither expect nor require this of our businessmen. After all, they are not supposed to have such responsibility. Nevertheless, neither Standard Oil nor the country could escape the consequences of the agreements. It would seem, in the light of this experience that the least the government can do is provide a mechanism for acquainting itself with existence and terms of such agreements. The government, on the other hand, is unable to make proper judgements if it does not have complete information.'

Berge called attention also to the patent situation, as affected by cartel agreements, asserting that in an effort to save itself, I. G. Farben transferred more than 2000 patents to the oil company.

"Defeats Public Policy"

"While there may be some dispute as to the purpose of the assignment," he said, "the fact is clear. The Alien Property Custodian, even though he has vested his property, finds himself in litigation as to whether the patents were in fact transferred in a bona fide manner. Taken together with the provision in the Standard Oil-I.G. Farben contract, this instance presents the result of a carefully-conceived and well-developed policy of not only considering the war as an unfortunate interlude, but as a method of defeating public policy.

"This clause provides that even if the agreement should be interferred with by the government of the United States of if, in effect, war should take place between the countries or the respective parties, then at the conclusion of such interruption the parties shall come to a new agreement 'in the spirit of the old'."

Harden Testimony

In an unscheduled appearance before the committee, Orville Harden, Standard vice president, challenged Berge's interpretation of what the company did or intended and declared the agreement was of great value to the country.

"This brings up the question as to how an American business man in the future can solve the type of problem which confronted us in 1929 without subjecting himself to official criticism more than ten years after the event," Harden said.

"When we made this deal in 1929 the public's reaction was entirely favorable, and the United States Department of Justice was reported by the New York Times as saying that no action was contemplated.

Valuable to Nation

"We think that what we got and the way we got it was enormously valuable to this nation. From what we got came the development of 100-octane gasoline; out of it came synthetic toluene for the TNT in over half the country's war explosives; the technique for making synthetic rubber, especially from oil, which came from it was the basis of the bulk of the nation's entire wartime synthetic rubber industry.

"Would it have been better for the nation's interest not to have made these agreements?"

Russia Heavy Buyer of Portable Drilling Rigs

Russia has placed an order with Franks Manufacturing Company of Tulsa for $1 million worth of portable drilling rigs capable of drilling to 5000 feet. The order was entered by the Soviet purchasing agency at Washington, D. C., and is not a lend-lease transaction.

The Tulsa company will ship 20 rigs specially designed with caterpillar tread in the rear and wheel in front to provide 100 percent portability over the worst terrain in the Russian oil fields where they are to be used in rehabilitating damage caused by the Germans. The first units are scheduled to be completed in September, according to Carl White, Jr., president.

Franks had previously sold some 110 truck-mounted drilling rigs to Russia on orders first issued in 1939. The firm is now completely engaged in the production of its regular equipment lines, having completed its war contracts consisting of barrage balloon winch units and tractor cranes.

No Tax Reduction Seen Until War Is Concluded

All chances of reductions in tax rates in the near future were dissipated May 15 when President Truman served notice on Congress that he would not favor any such action until after the defeat of Japan. The President pointed out that 85 million buyers of war bonds had to be protected and that their only protection lay in continued high taxation.

His opposition was seen as killing all chances for adoption of the suggestion of Senator George of Georgia, chairman of the Senate Finance Committee, that taxes be gradually reduced, beginning now.

Truman's position, however, is not expected to deter the House Ways and Means Committee from going ahead with a plan for legislation to assist corporations through the reconversion period by speeding up the return of that part of their excess profits tax payments which is to go back to them, which involves no loss to the Treasury and in which no reductions of rates are contemplated.

Geology Papers

The program of The Texas Industrial and Commercial Research Council of The University of Texas, which meets in Austin, Texas, May 29, includes a paper on "Treatment of Oil Field Waters of Northeast Texas," by F. B. Plummer, geologist with the Bureau of Economic Geology, at the University.

Paul Weaver, geologist with the Gulf Production Company, of Houston, Texas, will also talk on "Deeper Water Supplies in the Gulf Coast Area."

Other geologists from the U. S. Geological Survey, will appear on the program.

Anti-Trust Protection to Be Included In Enabling Legislation, PIWC Told

The foreign oil situation and the Senate oil investigation were outstanding subjects of discussion at the May 17 meeting of the Petroleum Industry War Council, with Senator O'Mahoney of Wyoming, chairman of the investigation committee, giving the oil men a preview of what his probe would attempt to develop. Much of the discussion centered around the Anglo-American petroleum agreeement, with Deputy Administrator Davies reporting the results of his recent discussions in San Francisco with Senators Connally and Vandenberg regarding the dropping of all efforts to write anti-trust protection into the document, with a view to incorporating it in enabling legislation which is to be enacted by Congress following consummation of the pact.

Davies told the two senators that all of the departments involved were in agreement as to the desirability of such a course, and received approval of his suggestion that, on that basis, the British government be approached with a view to reopening discussions. The meetings last year at which the original agreement was drafted were held in Washington, but there is a possibility that the new negotiations may be switched to London.

Because of the failure of the armed services to provide definite information on changes in oil requirements as a result of the end of war in Europe and the switching of all military activity to the Pacific, the council was unable to study the effect of the new situation on domestic operations, and the economics committee confined itself to bringing its 1944 study on trends up to date.

"Trends in Industry"

Crude oil production this year is expected to average 4,737,000 barrels daily, an increase of 150,000 barrels over the 1944 average, but the discovery rate remains low, replacement costs continue high and petroleum product prices continue below the general commodity index, the council was told in a second report on trends in the industry submitted by its economics committee.

The committee pointed out that the Allied military forces in 1918 used about 39,000 barrels of gasoline daily while latest official figures show that this country now is supplying upward of 800,000 barrels of much better gasoline daily to United Nations' forces.

In 1918, gasoline consumption comprised 6500 barrels of aviation grade and 32,500 barrels of motor grades; military regulations do not permit disclosure of the amounts used in the current war, but the committee last year reported that up to 196 million barrels of aviation gasoline and toluene could be produced in 1944 if required. Military consumption of other oil products would show similar increases.

In 1918 prices of petroleum products registered 135.3 compared with 131.3 for all commodities, but in 1944 registered only 63.9 compared with 104.

"Thus," the committee concluded, "we continue the remarkable situation pointed out in the first book on trends; namely, peak demand, abnormally low discovery rate and high replacement costs, accompanied by petroleum product prices that are only about 60 percent of the general commodity index."

Runs to Stills

A series of charts estimated that against the expected daily average production this year of 4,737,000 barrels of crude daily average runs to stills would reach 4,743,000 barrels, against 4,551,000 barrels last year. It was estimated that the yield of gasoline would decline from 39.4 to 39.2 percent, of kerosine from 4.7 to 4.4 percent and of fuel oil from 42 to 41.9 percent (gas oil and distillate dropping from 14.3 to 13.7 percent while residual increased from 27.7 to 28.2 percent), while other products would increase from 13.9 to 14.5 percent.

These figures indicate a 1945 production of 769,630,000 barrels of motor fuel against 744,075,000 barrels last year, of which 678,630,000 barrels against 655,511,000 barrels would be gasoline from crude, and 91,000,000 barrels against 88,564,000 barrels other motor fuel. Kerosine production was placed at 76,170,000 barrels against 78,344,000 barrels last year, while residual fuel oil would amount to 488,200,000 barrels against 461,455,000 barrels and gas oil and distillate fuel oil 237,170,000 barrels against 239,152,000 barrels; natural gasoline and allied products was put at 104,000,000 barrels against 100,637,000 barrels, and benzol at 2,400,000 barrels, unchanged.

Requirements Shown

Total domestic requirements and exports will call for 1,950,000,000 barrels against 1,879,264,000 barrels last year, a daily average of 5,337,000 barrels against 5,134,900 barrels, it was stated. These figures would include 788,000,000 barrels of motor fuel against 737,163,000 barrels; 79,600,000 barrels of kerosine and range oil against 76,700,000 barrels, and 678,000 barrels of gas oil and distillate fuel oils against 690,900 barrels. The separation between domestic and export demand, however, was not shown, due to military restrictions.

The report concluded with 1944 production figures for individual foreign countries, showing that 408,770,000 barrels was produced in the Western Hemisphere outside of the United States, 324,845,000 barrels in Europe, including Russia; 226,025,000 barrels in the Middle and Far East, and 3,563,000 barrels in other areas; the world total, including the United States, was placed at 2,640,-

956,000 barrels, an increase of 318,103,000 barrels over 1943.

Production Division Report

Relaxations of PAW orders will follow as closely on the heels of WPB revocations on the delivery and use of materials as possible, the production committee was told in the monthly report of the PAW production division.

However, until such time as materials are readily available in quantities sufficient to carry out all production operations contemplated by the industry, the division proposes that a preference rating shall be assigned operators for use in acquiring materials.

The need to maintain production at or near present high levels until V-J day also makes it important that the maximum return of oil be obtained from the steel expended as long as there is any shortage of the latter. Accordingly, PAO-11 will be continued, although its spacing provisions will be relaxed at such times and to the extent that the increased availability of materials permit.

The committee was told that subsidy payments by Defense Supplies Corporation from August 1 to March 31, last, totaled $26,958,000 on 71,464,000 barrels of eligible stripper oil, an average subsidy of 38 cents a barrel. With monthly disbursements running between $4½ and $5 million, the annual cost of the subsidy is placed at between $55 and $60 million. About 33 percent of the subsidy is being paid to producers of Pennsylvania grade crude at 75 cents a barrel, 49 percent on production falling within the 35-cent bracket and 18 percent on production entitled to 20 and 25 cents a barrel.

At the request of OPA, a study was made to determine the proved crude oil reserves underlying fields and pools eligible for subsidy under the stripper well premium plan. The production division's estimate of these stripper reserves for the United States, based on a continuation of the current methods of production prevailing in the various fields, including secondary recovery methods by air, gas and water drive, is 1769 million barrels.

These reserves represent 8.16 percent of the total proved crude reserves of the nation and are concentrated largely in five states—Oklahoma, with 446 million; Texas, 406 million; Kansas, 138 million; Pennsylvania, 123 million, and California, 95 million barrels.

Materials Situation

The great question in the oil-materials field is the effect of redeployment of the military forces from a two- to a one-front war and its influence upon materials used in petroleum operations, the committee was told by Claude P. Parsons, PAW director of materials.

"The most important item to watch is oil country tubular goods because steel cases for bombs can be produced by the same limited mill facilities," Parsons said. "We have been in direct competition with the military for these facilities for several months. The military demand for bombs likely will continue at the present rate, or even higher, for the rest of this year at least."

However, Parsons said, PAW has been able to obtain a measure of protection in the form of a space directive on the pipe mills for 278,000 tons of oil country tubular goods, the first such directive to be issued. This, he said, is within 22,000 tons of the mills' total capacity of 300,000 tons per quarter.

This directive, he explained, was obtained through the cooperation of the military in relinquishing 30,000 tons of the mill space which was being held for it, after PAW representatives had demonstrated that petroleum was equally as vital to the war as bombs.

"Without an adequate supply of this item, the petroleum program would fall, with consequent damage to the war," Parsons explained. "However, if our efforts resulted in an insufficient supply, we were prepared to carry the problem to the Joint Chiefs of Staff for a decision between bombs and petroleum. If the decision favored bombs it would have to carry with it the responsibility for decreasing the drilling program in the third quarter."

A recent trip through Districts 2, 3 and 5 showed no other major materials problems bothering operators, he commented, and "it can be reasonably stated that with the tubular goods problem eliminated for the third quarter, with ample inventories in prospect for the fourth quarter, and with no major materials problems confronting the industry less than a week ago, we were in very good shape on V-E day."

Steel for Third Quarter

The production division report showed that PAW estimates call for 340,500 tons of carbon and 57,200 tons of alloy steel for the third quarter, including 299,500 tons of tubular goods, requiring withdrawals of some 50,000 tons of oil country tubular goods from inventory to complete the third-quarter drilling program for the completion of 7200 wells.

The report showed that District 1 will be allotted 8000 tons, or 55.2 percent, of its requirements of 14,500 tons of oil country tubular goods; District 2, 60,000 tons, or 83.3 percent, of 72,000 tons; District 3, 140,000 tons, or 86.7 percent, of 161,500 tons; District 4, 10,000 tons, or 80 percent, of 12,500 tons, and District 5, 32,000 tons, or 82.1 percent, of 39,000 tons; a total allotment of 250,000 tons, or 84.7 percent of the 299,500 tons required.

Parsons brought the committee up to date on the situation in other items essential to the industry.

Trucks are still critical on account of manufacturers' inability to produce the authorized production as scheduled, he said, but with some relief expected in the coming quarter if anticipated military cutbacks materialize; tires continue to be critical, but an extensive production expansion program is under way.

No relief is in sight at present for Class 1 track-laying tractors, and Classes 2 and 3 will continue to be critical, none of the talked-of military cutbacks having yet occurred. Approximately 230 internal combustion drilling engines are estimated to have been delivered in April, but they will remain critical for several months at least with no definite signs of military cutbacks at this time; shipments of spare parts have been in balance with the demand, except for models which are now out of production.

April production of tool joints was 41,023 and the backlog of orders was reduced from 513,691 to 502,657, with a further increase in production expected during the next few months. Almost all types of valves, except lubricated plug valves, have been getting progressively easier to obtain, but the availability of the lubricated plug valves has steadily grown worse.

Lumber Still Critical

Lumber remains very critical with no further relief in sight during the third quarter; allotments to PAW for the period are comparable to those for the current quarter. There were 819 pumping units produced in April and the present backlog of orders amounts to 4367; a considerable reduction has been achieved in manufacturers' lead time.

The supply of most of the components required by petroleum equipment manufacturers is in balance with demand, but anti-friction bearings and clutches are still giving some trouble.

The report was the last which Parsons will prepare for the committee. He plans to return to the industry in a few weeks after serving PAW for the past year and a half.

Assumes New Duties

C. C. Anderson, engineer-in-charge of the Bureau of Mines, Exell, Texas, helium plant since its opening in March, 1939, assumed on May 9 his new duties as assistant chief of the Petroleum and Natural Gas Division in Washington, D. C. Anderson, who has been with the bureau for 21 years, replaced H. C. Fowler, recently named supervising engineer of the bureau's Petroleum Experiment Station at Bartlesville.

C. C. Anderson

Most of Anderson's time since joining the bureau has been given to expansion of helium production facilities. He holds a B.S. degree in chemical engineering from George Washington University.

And Pays and Pays

The Texas House of Representatives has appropriated $1 million for the construction of a new building to house state courts, the money to come from the oil and gas enforcement fund.

Meanwhile oil and gas enforcement officers will continue to be housed in a former morgue, while most of its records are located in a floorless airplane hangar.

The oil industry pays the bill.

Buck Passing Charged on Matter of Availability of Civilian Gasoline

Intimating that some in the government are using factors other than the availability of oil supplies to defer and limit an increase in civilian gasoline rations, the American Automobile Association last week called on War Mobilization Director Fred M. Vinson for an accurate explanation of the situation which will allay the "widespread confusion and misunderstanding" that exist throughout the country.

In a telegram to Vinson, AAA President H. J. Brunner of San Francisco raised suggestions that the agencies responsible for gasoline are passing the buck to each other.

"The PAW," Brunner said, "takes the position that it cannot make a definite allocation until the armed services have given final estimates as to their needs for the war against Japan. It is the most natural thing in the world that the people generally should assume that the services and PAW had determined, to a large extent, the needs of the war against Japan in advance of V-E Day. Why can't a determination be made now?

"The OPA claims that it cannot make a move until PAW has made its certification of additional gasoline. The picture is further confused by intimations that government hesitates to allocate more gasoline because of the depleted condition of automobiles and the rubber on them, and further that there is a disposition within government to withhold additional supplies until at least part of the heavy driving season is past."

Wants Added Rations Now

Brunner urged Vinson to scrutinize the military estimates in order to avoid the possibility of unnecessary stockpiling to the detriment of the civilian economy, and that additional rations be provided now and not held up until July 1, as has been intimated would be done.

"It is going to be very difficult to convince the American people that the end of the war in Europe will result in the saving of only one to two hundred thousand barrels of petroleum products a day when we have a daily production in excess of 5 million barrels," he said. "All explanations to date of the small surplus anticipated have been so couched in generalities that they utterly fail to carry conviction, but on the other hand tend to create the impression that there is an element in government that is determined to withhold some portion of what may be available. Some real down-to-earth explaining is now called for."

Justice Department To Accept PAW Orders

PAW orders will not be contested by the Department of Justice unless a definite showing can be made that they are illegal or unjustly discriminatory, it was indicated by Assistant Attorney General Wendell Berge in a letter to E. C. Bratt, Sterling Stations, Inc., Fitchburg, Massachussetts, inserted in the Congressional record May 16 by Representative Richard B. Wigglesworth of Massachusetts.

In his letter to Bratt, the assistant attorney general, who is head of the anti-trust division, reviewed the situation created by the shifting of Sterling Stations' operations from retail sale of gasoline to the brokerage of petroleum products and outlined the position taken by PAW in denying five of 12 permits sought for the importation of products on the ground that the areas to be served were adequately supplied.

PAW also claimed, it was pointed out, that Sterling's importations prior to September, 1943, resulted in unscheduled movements of critically-needed tank cars which could have been used more efficiently and had the effect of causing additional supplies to be shipped into areas already equitably supplied, and that prior to March 1, 1945, "your importations of naphtha and natural gasoline for blending with motor fuel required the use of a considerable number of tank cars which could have been used more efficiently to supply other areas faced with critical shortages."

Berge's letter brought a reply from Bratt, expressing disappointment over the failure to obtain relief "from practices which we considered to be discriminatory, monopolistic, and detrimental to the war effort."

Asking for reconsideration, Bratt said: "It appears that the Department of Justice has simply taken the replies of PAW and Defense Supplies Corporation and passed along excerpts therefrom as its reply. In this action we are of the opinion our charges have not been considered on their merits, hence, that your letter is not proper either an opinion as to validity of said charges or a denial that grounds for them exist."

Bratt denied that the areas proposed to be served under the permits which were denied were already adequately supplied, pointing out that persistent gasoline and heating oil shortages followed, and declared that his company's importations did not result in any inefficiency in the use of tank cars.

Geological Survey Issues Michigan and Alaska Maps

Large untested areas of the Trenton and Black River limestones in the Michigan Basin which are potentially productive of oil and gas are covered by the Geological Survey in maps issued last week as Preliminary Chart 11 of the Oil and Gas Investigations series, available from Washington and the State geological survey division at Lansing, Michigan, at 30 cents each.

The potentially productive areas, the bureau explained, are present where the Trenton-Black River sequence has been partly or wholly dolomitized, and include the southern part of Michigan and an adjoining area in parts of Ohio, Indiana and Illinois.

The bureau also has issued a map of the Katalla area of Alaska, 50 miles southeast of Cordova, from which, between 1902 and 1933, 154,000 barrels of high-gravity paraffin-base oil was produced, representing the entire output of Alaska.

The map shows the seven members of the Katalla formation, as well as unconsolidated quaternary sediments and tertiary intruisve rocks. A tertiary shale bed ranging in thickness from 50 to 400 feet at the outcrop is held by the bureau as probably the source bed of at least part of the oil in the field, and might yield comparable amounts in other parts of the Katalla area. Copies of the map may be secured from Washington at 75 cents each.

Rehearing on Gas Lines Scheduled This Week

The Federal Power Commission will hold further hearings in Washington beginning May 23 on the application of Central Illinois Public Service Company for an order directing the Panhandle Eastern Pipe Line Company to establish a connection with Central's distribution system near Mattoon, Illinois, and application of Kentucky Natural Gas Corporation for authority to construct 20 miles of 6-inch pipe line from a connection with Panhandle Eastern's lines near Tuscola, Illinois, to a connection with Central Illinois.

Heard originally in Chicago in April, the additional hearings result from an amendment of Central Illinois' petition, asking for authority to construct and operate its own facilities for the connection in case the commission finds insufficient evidence to warrant ordering Panhandle Eastern to construct the line.

Hearings set by the commission for May 15 to receive testimony on applications filed by Panhandle Eastern for authority to export natural gas to Canada and construct the necessary facilities, have been postponed until June 20 at the request of the Texas Railroad Commission and the Kansas State Corporation Commission.

Asks Gradual Reduction In Oil Production Rate

Foreseeing the possibility of an increase in crude oil storage because of the cessation of hostilities in Europe, Beauford Jester, Texas Railroad Commissioner, has asked PAW for a gradual rather than a sudden reduction in oil production.

"The commission anticipates a marked reduction in oil production in view of the European situation but does not know when it will come," Jester said. "We hope it will be a gradual rather than in a lump cutback and are requesting that the PAW follow this plan."

Synthetic Rubber Seen as Having a Place in Immediate Postwar Economy

Possibilities that synthetic rubber may gain such a place in our immediate postwar economy as to make permanent retention of the industry inevitable were raised last week by a prediction by S. T. Crossland, executive vice president of Rubber Reserve Company, that it will be necessary for the government-owned plants to continue to operate at their highest rate of capacity until, and several years after, the liberation of the lands in which rubber grows.

"Results of continuing developments with respect to the utility and cost of synthetic rubber and the relationship between supply and demand for world needs, after the complete rehabilitation of natural production in the Far East, will largely govern the future of the rubber industry," Crossland said.

Forsees Production

For the more immediate future, Crossland foresaw that military and essential civilian needs would require a production of 1 million long tons of synthetic rubber this year and 1,200,000 tons in 1946, or 124 and 145 percent, respectively, of the over-all rated capacity for which the plants were originally designed. Production last year was 737,092 tons, but for the first four months of this year it totaled 296,045 tons.

Crossland listed factors which indicate a continuing increase in rubber consumption for several years during the postwar period, including the following:

1. Because of world-wide large scale building and reconstruction programs, demand for truck and bus transportation, with consequent heavy tire demand, is to be expected.
2. Passenger automobile owners throughout the world have built up a tremendous deferred tire demand, which it will probably take several years to fully satisfy.
3. Truck, bus and tractor owners will likewise have built up deferred tire demands.
4. Manufacture of both passenger and commercial vehicles is expected to reach new peaks during the immediate postwar years.
5. The use of rubber in products other than tires has been absorbing an increasing percentage of the total rubber consumption, and this trend may be expected to continue and possibly to be intensified.
6. It is reasonable to assume that military demand may continue fairly strong for a number of years after the cessation of hostilities, as a result of activities in occupied territories, demobilization activities and routine military maneuvers involving motorized and mechanized equipment.

Crossland said that information recently obtained regarding German synthetic rubber indicates that it is a different type than the American and, in many respects, inferior in quality, a particular deficiency being in its processing characteristics. Studies have been started, however, on certain chemicals used by the Germans which may be of benefit to our own program.

Corncob Motor Fuel Experiments Continue

The Department of Agriculture is making progress with its investigation of the possibilities of liquid motor fuel production from agricultural residues which perhaps, at some future time, may become a competitor of fuels made from oil shale and coal, on which the Bureau of Mines is working.

A process for chemical conversion of such things as corncobs, sugar cane bagasse, peanut shells, flax shives, oat and cottonseed hulls and burs, the department reported May 15, is moving into the semi-works stage of experimentation.

Laboratory investigations by department chemists indicate that from 90 to 95 gallons of liquid motor fuel can be obtained from a ton of corncobs or cottonseed hulls, about half of it in the form of ethyl alcohol. A plant is now being constructed to continue the work.

Around 200 million tons of farm wastes are produced annually, about half of which it is figured might be available for the production of motor fuels. Ground up, the material is treated with an acid, or saccharified, to produce concentrated solutions of dextrose and xylose, which are fermented into alcohol, butanol and acetone, liquids from which motor fuels may be made. Furfural and lignin are obtained as byproducts.

Courts or Congress to Get Tidelands Lease Problem

Oil men and California officials are looking to the Senate petroleum investigation to develop the situation with respect to oil-bearing tidelands, and a meeting of the latter in Washington last week, arranged for representation at the hearings when that phase of the investigation is reached.

The matter, meanwhile, rests in the hands of the Interior Department, where applications for oil leases on California off-shore lands are pending, following the submission to the President by the Attorney General of a report in which it was suggested court action be brought to test the government's title to the lands.

No action is expected to be taken on that recommendation, and the indications are that the issue will either be fought out in the courts on a lease granted by the Interior Department or made the subject of congressional action on legislation to be developed by the O'Mahoney investigation.

Humble Wins Bigger Ratio Of Hawkins Oil Allowable

Humble Oil & Refining Company won its suit in a Travis County District Court, attacking the Texas Railroad Commission's proration order for the Hawkins field, Wood County, a jury finding that the order prevented Humble from producing the recoverable oil in place beneath its leases.

By this decision, it appears that the court has found that it is the duty of the commission to distribute the allowable in a manner that will permit the recovery of the amount of "oil in place" beneath each lease in an oil field, even though this would reduce to very small amounts the allowables for wells located on small tracts.

Humble had contended that the allowable of wells producing in the Hawkins townsite was out of all proportions to the volumes in place beneath those properties. It contended that during the life of the field 30 million barrels of oil would be pulled from Humble leases to be produced through townsite wells.

When first presented to the Railroad Commission, last August, Humble's share in the field allowable was increased to approximately 72 percent; however, the company contended that it was entitled to approximately 76 percent.

If the rule of law established here is sustained by the higher courts most Railroad Commission proration orders would have to be revised considerably, unless the Legislature chooses to enact a different law.

AAPG President Has No Fear of World Oil Famine

The North American continent faces no oil famine threat, M. G. Cheney, president of the American Association of Petroleum Geologists, told members of the Houston Geological Society last week.

"I cannot see an oil famine, but of course it will take more science and more expensive exploration," he said. "Much prospective oil territory is known to exist which will call for study and exploration."

The AAPG head said much attention is being directed to foreign fields and promising territory whose proven reserves are growing rapidly.

"In keeping with world peace plans, domestic oil and other United States industries will have to yield some ground in the interest of international trade and good will," Cheney said. "Those in authority should make adjustments at a modest rate so that domestic industry be not dislocated, causing abandonment of producing wells and neglected servicing of the hundreds of thousands of small producing wells in the United States."

Discussing the deep drilling trend on the Texas and Louisiana Gulf Coast, Cheney said it is difficult to draw a limit for prospective producing horizons in this area.

Haynesville Pressure Maintenance Plan to Be Dedicated on June 1

Dedication of the Haynesville Operators Committee's pressure maintenance and liquid hydrocarbon extraction plant in the Haynesville field, North Louisiana and South Arkansas, will be held June 1.

This pool, located in Claiborne Parish, Louisiana, and Columbia County, Arkansas, consists of 180 wells and has been unitized into one lease.

Governors of Louisiana, Arkansas and Mississippi, state conservation officials and PAW officials are expected to be on hand for the June 1 ceremony.

Following the development in the Pettit zone of the Haynesville field in the early part of 1942, engineers and operators sought to conserve gas from the reservoir with the oil, and compress the gas in a compressor plant for return to the producing formation, according to J. R. Butler, general manager of the plant.

In April, 1943, engineers of The Ohio Oil Company presented the first formal report of the newly organized temporary Haynesville Operators Committee. This report became the basis for deliberations of the committee.

Final plans called for a process for 15 million cubic feet of gas per day, extract gasoline and other hydrocarbons therefrom and compress the residue gas for return to the ground. It was estimated that 6¼ million barrels of oil will be recovered over and above what would have been recovered without repressuring. In addition to this, approximately 1,600,000 barrels of gasoline and other vital hydrocarbons will be recovered. Investment in plant and pipeline systems totals $2 million, but this is largely offset by saving in pumping equipment investment. Plant operating life is estimated at 20 years.

The Pettit Lime field has 180 wells completed at depths from 5300 to 5500 feet. Early development was on the Louisiana side of the Arkansas-Louisiana state line in Claiborne Parish, Louisiana, while later development saw a considerable extension of the field northward into Columbia County, Arkansas. The unit area consists of 13,620 acres and there are 1400 royalty owners.

Construction of the plant was begun in July, 1944, and first gas was injected back into the formation on January 25, 1945. Six wells are now used as injection wells and 105 miles of pipelines have been laid for gathering oil and gas for injection. The extraction facilities were placed in operation March 16, 1945, and the plant is currently producing 16,000 gallons of natural gasoline, 4000 gallons if iso-pentane and 10,000 gallons of butane daily.

The field currently is producing 6000 barrels of oil and 16 million cubic feet of gas daily. Of the gas produced about 13 million cubic feet is injected into the reservoir and the balance is used as fuel or consumed as shrinkage.

U. S. Production Again Sets Record High Mark

United States crude oil production again broke all previous records when it averaged 4,869,100 barrels daily in the week ended May 19. That was an increase of 8760 barrels over the rate in the previous week.

The current high rate of production is necessitated by the continuing heavy demand for petroleum products in spite of victory in Europe.

The further increase in output in the week of May 19 reflected the expansion of California's rate to 945,100 barrels daily from 922,200 the week before and an increase in Michigan to 50,300 daily from 45,750. Texas declined to 2,176,100 barrels daily from 2,186,100 the previous week and Mississippi to 49,800 from 54,250.

Crude Oil Production in the United States

(Estimates compiled by The OIL WEEKLY. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED May 19	May 12
Alabama	450	400
Arkansas	79,600	79,800
California	945,100	922,200
Colorado	10,600	11,000
Florida	15	15
Illinois	194,250	195,800
Indiana	11,100	11,450
Kansas	271,300	270,900
Kentucky	26,850	27,700
Louisiana	370,850	370,750
North Louisiana	71,100	71,000
South Louisiana	299,750	299,750
Michigan	50,300	45,750
Mississippi	49,800	54,250
Missouri	100	100
Montana	20,850	21,840
Nebraska	900	900
New Mexico	104,750	104,750
New York	13,100	13,300
Ohio	6,300	6,700
Oklahoma	385,400	385,150
Pennsylvania	35,700	35,600
Tennessee	35	35
Texas	2,176,100	2,186,100
Upper Gulf Coast	563,300	563,250
East Texas Field	379,880	379,800
Rest of Eastern Texas	138,250	138,250
Lower Gulf Coast	252,450	262,450
Southwest Texas	81,950	81,900
South Central Texas	21,200	21,250
West Texas	495,250	495,200
North Texas	153,900	154,000
Panhandle	90,000	90,000
West Virginia	8,150	8,100
Wyoming	107,500	107,750
Total United States	*4,869,100	4,860,340

* New all time peak.

BUREAU OF MINES REPORT

Total stocks, foreign and domestic, May 12, as reported by the Bureau of Mines were 221,596,000 barrels with a daily average production of 4,860,000; and runs to stills 4,850,000.

Texas June Allowable Is Slightly Over PAW Mark

The Texas Railroad Commission last week after statewide hearing entered its June order fixing an allowable of 2,312,786 barrels daily. It estimated that under-production of 6.1 percent or 141,080 barrels would result in actual production of 2,171,706 barrels or 1706 barrels more than the PAW June crude certification.

The commission estimated that the Texas fields would produce 164,136 barrels of condensate and natural gasoline for a total production of 2,335,842 barrels of all oils.

The only changes in the order were small reductions at Hawkins and Talco. The order provides that East Texas shall be shut in six days along with the rest of the state. The Panhandle again is exempt from shut down.

Nominations were filed by operators at the hearing to purchase 2,354,447 barrels daily during June, 7650 barrels more than were purchased in May. Most of the increase was for sweet crude from Southwest Texas. The demand there was up 9666 barrels daily. The commission reported a decline of 2.27 pounds in the average pressure in the East Texas field during April when production there averaged 382,000 barrels per day.

The commission announced that hereafter reports on stocks on tank farms must be by individual tanks, a practice that was general before the war.

Proposed changes in the rules regarding separation and measuring of condensate wells were discussed with likelihood of a change being promulgated at the next statewide hearing.

Current Sour Gas Prices Said to Be Inequitable

Charges that inequities exist in the present prices for "sour" gas used in the manufacture of carbon black are being made by operators and royalty owners in the Texas Panhandle where prevailing prices for this type of gas is from ¾ to 1.2 cents per thousand cubic feet. They contend that since the only difference between "sweet" and "sour" gas is the sulphur content they should benefit from the difference in the sulphur extraction costs which are said to average about ½-cent per thousand.

Because of the nature of much of the gas it was not suitable for domestic uses when the big fields were first opened. In 1933 the Texas Legislature passed a law authorizing the use of both "sweet" and "sour" gas from the Panhandle for the purpose of extracting the natural gasoline without making provision for the use of residue gas and as a result billions of feet of residue gas was vented and wasted. Two years later another law was passed authorizing the use of residue gas in the manufacture of carbon black.

The price of carbon black manufactured from gas from the Panhandle has been frozen at 3.3 cents per pound because of the low cost of the gas to the manufacturers.

IPAA Discusses Stripper Prices Favors Fair Trade Practices Code

Members of the executive committee of the Independent Petroleum Association of America met May 17-18 to discuss current problems of the industry, among those outstanding being the situation with respect to the option on intangible drilling costs, the Senate oil investigation and the position to be taken by the organization with respect to a permanent postwar price differential for stripper oil.

A questionnaire survey made by the association as to how a high price for stripper oil should be obtained was so inconclusive and it was deemed necessary to make a further study before adopting any program. Returns, it was said, were about evenly divided between a higher price to be paid by the first purchaser and a government subsidy, with many variations, such as financing the differential by a tax on imports, etc.

Much of the discussion was devoted to the Senate oil hearings just opening and to arrangements for the presentation to be made by representatives of the different committes which were set up by the steering committee. A resolution was adopted endorsing the establishment of a national code of fair trade practices for petroleum distribution and marketing approved by the Federal Trade Commission under existing law.

During the course of the meetings, the committee held two evening dinners, at one of which Senator O'Mahoney, chairman of the investigating committee, discussed reconversion and postwar problems. Members of the committee also attended the opening session of the hearings.

It was agreed to hold the fall meeting at Tulsa October 15-17, but decision was deferred as to whether it should be a general convention of all members or confined to a meeting of the directors, as was the case last year in deference to wartime travel restrictions.

Three Oil Men Named On Reparations Group

Two Texas oil men were included by President Truman as staff members of the Allied Reparations Commission.

They are Major J. R. Parten of Houston, president of the Woodley Petroleum Company and chairman of the board of the Premier Oil Refining Company of Longview, and Colonel E. E. (Buddy) Fogelson, Dallas independent operator.

The oil men will accompany Edwin W. Pauley, United States member of the reparations commission, to Moscow for the coming meeting of the commission.

Parten, who served as PAW director of transportation from April to November, 1943, was named industrial adviser. J. Howard Marshall, of Ashland, Kentucky, until a few months ago PAW chief counsel, was named counsel of the commission.

President Truman formally endorsed Pauley's objectives of "absolute insurance against German or Japanese rearmament—ever again," and said he thought the organization which he had just named was the finest of its kind ever assembled.

Field Engineering Group Is Organized at Carthage

The Carthage (Texas) Field Engineering Committee has been organized with PAW sanction to collect, arrange and distribute data on the various reservoirs within the field and to assist in orderly development and operation there. The committee comprises representatives of lease owners of more than 90 percent of the field's 200,000 acres.

W. H. Barlow has been retained as director with offices in Carthage, Texas. R. O. Garrett, Arkansas-Louisiana Gas Company, is chairman of the executive committee and also chairman of the general committee. Other members of the executive committee are: T. W. Johnson of Union Producing Company; A. C. Glassell; H. K. Greenleaf of The Chicago Corporation; J. O. Sue of Humble Oil & Refining Company; F. N. Speller, Tyler, Texas; Colin Rae, Skelly Oil Company.

Letters to Editor

Fallacy of Discovery Statistics

To The Editor:

About a year ago someone published statistical data to show that out of some 33 wildcats drilled on the basis of reflection surveys, only one discovery was made and that half the credit for this discovery should go to subsurface work.

From the statistics in THE OIL WEEKLY's May 14, 1945, issue we learn that out of 146 geophysical United States discoveries in 1944, 142 were made on seismograph locations and that for all of the 102 discoveries, credited to geology plus geophysics, the geophysical credit should go to the seismograph.

We also learn that the over-all United States figures "show that 21.9 percent of the holes drilled on technical advise were producers as contrasted with 10.9 percent successful in the case of holes located without technical advise. Therefore, in 1944, locations based on technical recommendations were twice as successful as those drilled without such advise."

Inasmuch as the combined efforts of the gravimetric, magnetic, geochemical, radio-activity, electrical and other methods are credited with 4 discoveries out of 73 wells drilled, which means that 5.5 percent were successful, the obvious mathematical conclusion would be that a random wildcat has a two times better chance to discover production, than a wildcat located by any of the above methods, or by a combination thereof.

"Facts Behind Statistics"

Furthermore since out of 844 discoveries made on technical advise only 4 discoveries or 0.47 percent are credited to these methods, the logical conclusion might be to discontinue any such wasteful efforts.

Strange indeed are the conclusions that may be drawn from statistics. If, in spite of the above, majors and independents alike are conducting large scale surveys by such methods, they probably go to this expense because they pay more attention to the facts and circumstances behind such statistics, than to the statistics themselves.

Very few wells could possibly be credited to any one method exclusively, in regions that have been extensively prospected for by various geophysical methods and by the drill.

Procedure Described

The reserves discovered per wildcat, per prospecting method and respective costs, would greatly increase the economic value of such statistics.

It also would be interesting to know, how many times a particular area had to be surveyed by reflections, before the structure was recognized by them (seven times at Tepetate, Louisiana, for example) and whether the structure had previously been located by other methods.

Inasmuch as a reflection survey is a fairly expensive proposition, it usually means that companies and individuals drilling on this type of geophysical advice are well financed, are prepared to survey the area in sufficient detail, can make the proper location without landowners' or acreage interference, can drill the well right and to the proper depth.

For long years the reflection method was unquestionably the best means to discover local structure under certain geologic conditions and it was logical that the financially strong would adopt it as the standard method.

Harmful to Progress

This does not mean that other methods have not been developed or are being developed, which give equal or better results.

I do not see any useful purpose in statistics, which go to extremes in discrediting accepted methods or in discouraging the application and development of new geophysical methods, the need for which is generally recognized.

Whether produced intentionally or unintentionally, the impression such statistics convey is wrong and harmful to scientific progress.

W. P. JENNY

Consulting Geologist and Geophysicist, Houston, Texas.

By V. G. GABRIEL
Consulting Geophysicist, Los Angeles, California

THE theory of probability plays an important part in present day industry and science for the evaluation of various trends and commercial possibilitiees, in research, for the elimination of over-costly methods, techniques, and practices, etc. A careful application of this theory to everyday life both in time of peace and war is essential to insure efficiency.

Uspensky defines the theory of probability as a brand of applied mathematics dealing with the effect of chance. Laplace, a great French mathematician, stated in the beginning of the nineteenth century: "the theory of probability is nothing else but common sense expressed in mathematical form."

Efficiency requires that common sense in mathematical form be applied to problems of everyday life, both in war and peace.

Probability of Chance

From time immemorial, especially when life was less complicated and more direct than at present, man and beast have been using their common sense for the evaluation of their chances in the struggle for survival and a better life. Any attack or retreat calls for the evaluation of the enemy's numbers, its equipment, its morale, etc., as well as your own resources. If there is small chance for success, a prudent leader retreats; if a good chance for success, a brave leader attacks.

Today a business man is compelled to evaluate step by step his chances for success not only in order to keep his business out of the red but, what is more essential, also to estimate his chances of good profit and healthy expansion. It is a common sight on the streets of fast-growing towns and cities to see men counting human traffic flowing by some commercial establishments and empty city lots. By experience men have learned that the number of paying customers depends to some extent on the number of men who are passing by. By assuming that a certain percentage of passersby are potential customers, the investigator is usually able to arrive at some conclusion in regard to the chance for success.

By experience based chiefly on the comparison of somewhat identical events, men have learned to evaluate in a rough way the chance or the probability of an event materializing under certain basic conditions. However, business men have also learned that in many cases it is next to impossible to identify the variety of basic conditions present in a group of events under investigation. To establish the laws of probability or chance on a firm basis, detailed study of the events which are a subject of various definite basic conditions should be made.

Mathematical Theory of Probability

The mathematical theory of probability based chiefly on the experience gained from the study of various games of chance is an answer to this demand.

Cards, dice, lottery, and betting on horses, prizefighters, etc., are the most popular games of chance. In spite of their visual simplicity, many games of chance prohibit a complete evaluation of basic conditions present. For example, the speed of a horse on a certain day depends on physical and psychological factors of both the horse and its jockey, and therefore, strictly speaking, is outside the theory of probability.

Application of the principle of probability demands careful grouping of somewhat similar objects; cards in one group, dice in another, etc. Moreover, each number of a group is subject to identical conditions: for example, dice in a dice game, selecting a card in a card game. Each member of the same group has equal chance, equal rights if it is permissable to so define, with other objects within its group. From the equality of chance within a group, it follows that each member posseess an equal fraction of probability and that the total probability for all members in the same group is equal one.

Therefore, the maximum probability for any event never can be more than one, which signifies certainty. Zero probability means that the event cannot happen at all. Because total probability of mutually exclusive and exhaustive events equal one, it is always true that if the event has a probability, let us say, 1/6 to happen, it has $(1 + 1/6)$ probability not to happen.

Independent Groups

In dealing with two independent, somewhat identical groups the use of more complicated formulae is necessary. For example, let us have one complete suit of 13 cards at one end of the table and another complete suit of 13 cards at the other end, the probability to select two specified identical cards from the two suits will be

$$\frac{1}{13} \times \frac{1}{13} = \frac{1}{169},$$ or one chance in 169.

By mixing these two suits the probability of drawing two identical cards (let us say aces) from the group of 26 cards will be

$$\frac{2}{26} \times \frac{1}{25} = \frac{1}{325},$$ or one chance in 325.

In dealing with large numbers of trials an understanding of Bernoulli's Theorem is of importance. Bernoulli, a great 17th century mathematician, stated that with the probability of approaching one or certainty as near as we please, we may expect that the relative frequency of an event E in a series of independent trials with constant probability "p" will differ

TABLE 1

Basis for Location of Exploratory Holes Drilled in the United States

YEAR	GEOLOGY			GEOPHYSICS			GEOLOGY AND GEOPHYSICS			SUNDRY, NON-TECHNICAL		
	Producer	Dry	Probability of Producer	Producer	Dry	Probability of Producer	Producer	Dry	Probability of Producer	Producer	Dry	Probability of Producer
1938	192	1,041	1 in 6.4	78	252	1 in 4.2	31	69	1 in 3.2	44	535	1 in 13.2
1939	135	1,006	1 in 7.7	69	400	1 in 6.8	13	40	1 in 4.1	43	666	1 in 16.5
1940	198	1,204	1 in 7.1	100	446	1 in 5.5	22	81	1 in 4.7	35	797	1 in 23.8
1941	300	1,380	1 in 5.5	143	437	1 in 4.1	28	111	1 in 5.0	30	771	1 in 26.7
1942	307	1,433	1 in 5.7	110	485	1 in 5.4	42	134	1 in 4.2	22	587	1 in 27.7
1943	411	1,828	1 in 5.5	149	545	1 in 4.7	66	243	1 in 4.7	23	500	1 in 22.8
Total 1938-43 Inclusive	1,543	7,892	1 in 6.1	649	2,565	1 in 5.0	202	678	1 in 4.4	197	3,856	1 in 20.6

After Lahee and Others.

from that probability by less than any given number "a">0, provided the number of trials is sufficiently large. As an illustration take the act of tossing a coin a number times. It is self-evident that there is an equal probability, that is the probability is equal to ½, to obtain heads or tails on the first throw, nevertheless there is a chance to obtain, for example, three heads or three tails on the first three throws. This probability is ⅛. Bernoulli's Theorem holds that by taking sufficient number of trials the ratio between the number of successful trials differs from a constant probability inherent in that particular event by an insignificant number approaching zero. It is of interest to note that Buffon, a French scientist of the 18th century, tossed a coin 4040 times and obtained 2048 heads and 1992 tails. Assuming that the mathematical probability for either heads or tails is ½, we obtain

$$\frac{2048}{4040} = 0.507 \text{ and } \frac{1992}{4040} = 0.493$$

as the computed actual frequencies for heads and tails respectively and which do not differ perceptibly from their mathematical probabilities.

In the evaluation of games of chance as well as in the industry the, so called, mathematical expectation of the player is of significance. Mathematically it is expressed as,

E (math. expectation) = pa — gb

Where a — is the sum of money a player can win

p — is the probability of winning "a" dollars

b — is a sum of money the player can lose

g — is the probability of losing "b" dollars

If the mathematical expectation is positive then the player may expect, with a probability approaching certainty, to win an arbitrary large amount of money playing a sufficient number of games.

If each single game is equitable, the probabilities of ruin are inversely proportional to the fortunes of the players. For example, take two equally skillful and honest players, A and B. Also assume that player A starts the game with a sum of money equal to "a" dollars, whereas B has "b" dollars in his wallet. If they play a sufficiently large number of games the chances of ruin will be $\frac{b}{a+b}$ for the player A and $\frac{a}{a+b}$ for the player B. If b is twice larger than the sum of a, the probability or ruin for A and B will be ⅔ and ⅓, respectively.

Mathematical Probability in Industry

As stated elsewhere in this article, the laws developed by the theory of probability are based on careful grouping of somewhat identical objects or definitions as well as on the exact knowledge of essential conditions under which the event takes place. In life, however, careful grouping and the exact knowledge of essential conditions is almost beyond practical means. In spite of numerous drawbacks and imperfections, the application of the theory to life gives valuable information to those who understand its possibilities and its limitations. Reputable insurance companies through careful grouping are able to arrive at some definite conclusion in regard to the probable percentage of mortality prevalent in various groups assembled according to age, occupation, sex, etc., and thus are able to set standard charges fair to both their clients and the insurance company. Statistical organizations by careful study of relatively small numbers in the population increase their reputation and usefulness through forecast of trends in business, taste, and politics with a relatively small margin of error. (Gallup poll for example.)

In the oil industry, statistical studies are constantly applied for the evaluation of trends, in research, and for the elimination of over costly methods and techniques. It is also fortunate that statistical investigations conducted by numerous oil concerns are usually known through publication in technical and scientific journals. Because of the urgent need for additional oil reserves, prospecting for oil is an important and necessary phase of the oil industry. Various methods and techniques are employed in exploration for oil which for the sake of convenience can be subdivided into three main groups: Geological, geophysical and nontechnical.

For the last decade Dr. Frederick H. Lahee and other able investigators not only have applied statistical studies for the evaluation of various methods used in prospecting but have made known the results of their research through publication.

Table 1 and Table 2 give statistical evaluation of various methods used in exploration for oil. In order to conform with the actuality, however, the basis for location of exploratory holes and wildcat wells is subdivided into the following four groups according to the source of information: 1. Geological information only. 2. Geophysical information only. 3. Both geological and geophysical information. 4. Non-technical information.

Each group contains three columns giving the number of successful (producing) holes, the number of dry holes, and the probability of a producer, that is a chance of getting an oil well, expressed as one hit per number of drill holes.

Evaluation of Methods

In spite of a relatively small number of drill holes involved in some of the computations, the tables give a consistent and reliable basis for the evaluation of various methods used in oil prospecting. According to Table 1 containing the drilling data for the United States, the overall probability in an interval of time from 1938 to 1943, inclusive, for a successful well was one in 6.1 if based on geological information only; one in 5.0 if based on geophysical

■ CONTINUED ON PAGE 58

TABLE 2

Basis for Location of Exploratory Holes Drilled in Texas

YEAR	GEOLOGY			GEOPHYSICS			GEOLOGY AND GEOPHYSICS			SUNDRY, NON-TECHNICAL		
	Producer	Dry	Probability of Producer	Producer	Dry	Probability of Producer	Producer	Dry	Probability of Producer	Producer	Dry	Probability of Producer
1938	104	677	1 in 7.5 (13.3%)	34	134	1 in 4.9 (20.2%)	12	30	1 in 3.5 (28.6%)	6	181	1 in 31.2 (3.2%)
1939	70	445	1 in 7.4 (13.6%)	26	130	1 in 6.0 (16.7%)	7	19	1 in 3.7 (26.9%)	28	241	1 in 9.6 (10.4%)
1940	73	549	1 in 8.5 (11.7%)	27	162	1 in 7.0 (14.3%)	13	37	1 in 3.9 (26%)	9	194	1 in 22.6 (4.4%)
1941	140	546	1 in 4.9 (20.4%)	43	173	1 in 5.0 (20%)	22	51	1 in 3.13 (30.2%)	9	206	1 in 23.9 (4.2%)
1942	101	466	1 in 5.6 (17.8%)	49	173	1 in 4.5 (22%)	26	73	1 in 3.8 (26.2%)	7	171	1 in 25.4 (3.9%)
1943	128	655	1 in 6.1 (16.4%)	51	193	1 in 4.8 (20.9%)	27	75	1 in 3.8 (26.4%)	7	120	1 in 18. (5.5%)
Total 1938-43 Inclusive	616	3,338	1 in 6.4 (15.6%)	230	965	1 in 5.2 (19.3%)	107	285	1 in 3.7 (27.3%)	66	1,113	1 in 17.9 (5.6%)

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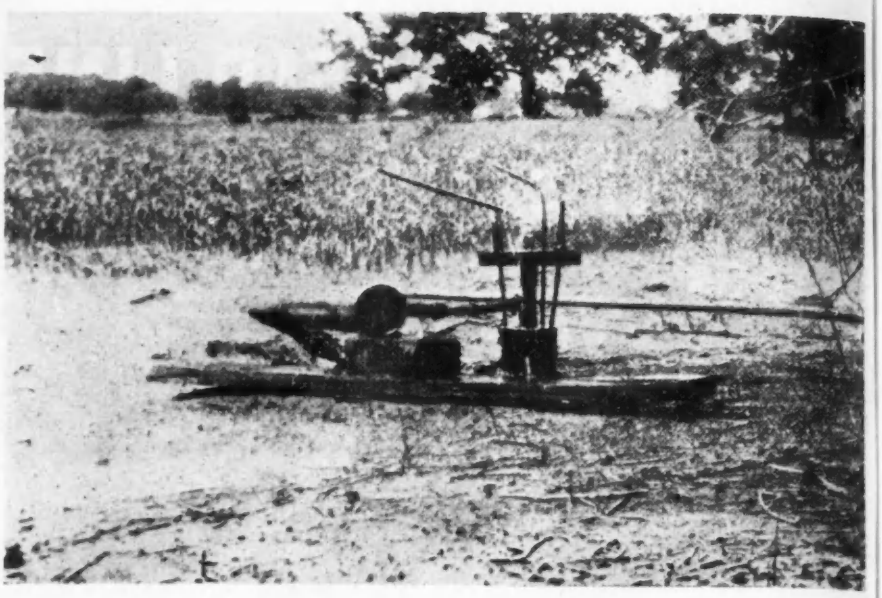
Salt Water Disposal Rules

Prevention of pollution and other problems of disposal are receiving increasing attention from operators at a cost of approximately $100,000 a month.



An abandoned gas well flowing salt water. Note lack of vegetation near the well

By ANTHONY GIBBON
Staff Writer

THE proper disposal of salt water from producing oil and gas wells and the prevention of pollution of public and private sources of water supply, as well as the need to guard against impairment of public sanitary facilities and damage to private and public lands and installations, is a problem that sooner or later confronts the oil and gas operator.

Increasing attention to this production phase has been given by major and independent oil companies. Departments staffed by experts in salt water disposal have functioned for some years and their work is steadily expanding in scope and value. In contrast to the primitive open-pit evaporation systems which were first introduced into the oil fields in an attempt to impound and divert brine from producing wells, engineers have designed and successfully used salt water disposal systems which handle millions of barrels of fluid per day.

Big Business

Salt water disposal is big business in the oil industry. Approximately 50 million dollars have been spent on salt water disposal plants and producers are currently spending at the rate of $100,000 a month in solving this vexing problem.

When oil and gas were first produced in the Mid-Continent area salt water was permitted to flow on the ground at the tank batteries and these were so located that the brine flowed directly into draws or minor streams. In those early days salt water was considered by the operator and landowner alike as an unbeatable nuisance. As development increased, however, and new pools discovered and developed in rich farming areas and near public drinking water reservoirs, it was apparent that a more satisfactory method of disposal had to be developed.

Laws were enacted to control the disposition of oil field wastes. Rules were prescribed by special boards and other regulatory bodies with power under the law to enforce their decisions. Producers were just as anxious as the governing bodies to prevent damage from salt water and protect themselves from lawsuits filed by landowners and others who were injured by uncontrolled flow over their properties.

Varied Damage

Those who might be damaged by the improper handling of oil field wastes include landowners, stockmen, farmers and orchardists, municipalities, mine owners, owners of adjacent oil and gas properties, royalty owners, industries maintaining their own water supply and irrigation companies. Improper disposal of oil field brines will damage aquatic and other wild life, virgin forests and pastures, cultivated crops, orchards and groves, lakes and recreational facilities, mines, gas and oil formations, surface and subsurface water supply.[1]

It should be remembered that one barrel of highly concentrated brine is capable of destroying the potability of more than 200 barrels of drinking water. The scope of the potential danger can therefore be seen when it is realized what immense quantities of brine are brought to the surface along with the oil. The only logical answer to the hazard is in careful handling and adequate disposal.[2]

A poorly plugged well. Note salt water flow and corroded casing.

While major oil companies and larger independent producers maintain legal and technical men to cope with their salt water disposal problems, many individual operators, faced with the problem of pollution from oil and gas producing wells, are at a loss as to the procedure to be followed. Major oil company staffs are generally willing to cooperate but this is not always convenient in view of manpower shortages and the fact that men who can furnish information are frequently absent from the home office and in the field.

Confronted with the problem of disposing of well brine in accordance with regulations of the federal government and the oil-producing states, the operator should be conversant with the various laws and methods of procedure and know where and to whom he should apply for authority.

Federal and state regulations concerning the handling of oil field brines vary and, so far as can be determined, have not been compiled or codified in a single volume. In order to meet the informational needs of the oil operator, rules in condensed form are presented below as they apply to salt water disposal and the prevention of pollution on federal lands, and in Oklahoma, Kansas, Illinois, Louisiana, Texas, New Mexico, Kentucky and Michigan, areas where most of the nation's oil is being produced. Rules are also included for the Osage Nation in Osage County, Oklahoma.

Mississippi, which produces more than 50,000 barrels of oil daily, has not as

yet made lsgislative provision to take care of the problem but salt water disposal and pollution prevention is now being studies and doubtlessly will shortly be embodied in rules governing oil and gas conservation practices.

Federal Regulations

Operators holding oil and gas leases from the federal government are prohibited from polluting streams or subsurface water of leased or other lands or to damage surface lands. They have the right to undertake such measures as will prevent pollution but if useless liquid products of wells cannot be treated or destroyed or if the volume is too great for disposal by usual methods without damage, the supervisor must be consulted and the useless liquids disposed of by some method approved by him.

Federal regulations further provide that the lessee may not use any formation or well for water disposal without first notifying the supervisor and receiving written approval prior to commencing the work.[3]

Osage Indian Reservation

Indians are the wards of the federal government although they conduct their oil and gas business through tribal councils. The Osage Reservation is the nation's biggest Indian oil and gas producing property and special rules for the disposal of salt water are in effect.

They provide that all bottom sediment and salt water from tanks or wells shall be drawn off into proper receptacles and shall not be permitted to run over the surface of the land or into creeks and ravines, and where earthen tanks or sump holes are used they shall not be in any ravine but must be so located that water from rains will not flow into them and wash out the bottom sediment or destroy the dams, and in cases where the sediment is not run through some treating process it shall be burned at least once every week.

Where it is impossible to burn the waste or where it is necessary to pump the salt water in such quantities as would damage the surface of the leased land or adjoining property or pollute any fresh water, the lessee shall notify the superintendent, who shall give instructions in writing as to the disposition of sediment and salt water.[4]

Vegetation destroyed by overflow from combination oil-waste and brine ponds

Salt Water Disposal in Texas

Since Texas produces more oil than any other state it follows that its salt water disposal problems are serious and the Texas Railroad Commission has adopted and enforces strict rules. That these are being observed is evidenced by the heavy expenditures for disposal systems reported by major companies and independent operators.

In Texas all wells producing 2 percent or more salt water must be reported to the commission's agent in the district in which they are located or to the commission's office in Austin.[5]

The Texas Railroad Commission provides for the following procedure for salt water disposal: Request is made by operator to the Oil and Gas Division for permission to dispose of salt water. Attached to the application is a map showing lease owners within ½ mile. The commission then sets the matter for hearing after ten days' notice and sends each of the operators within ½ mile a copy of the notice. At the hearing the applicant gives complete details as to his proposed operation and the commission issues its order, usually permitting such salt water disposal, particularly if there are no objections.[6]

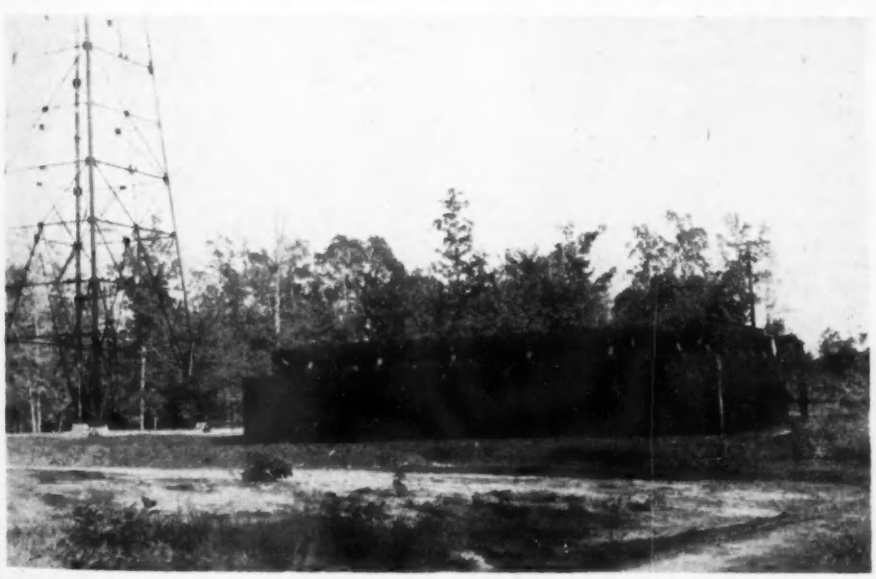
The big East Texas oil field is utilizing millions of barrels of salt water produced to maintain pressure and the project is conducted by the East Texas Salt Water Disposal Company, domiciled at Kilgore. It is an association of operators who contributed the capital in the interest of conserving and maintaining pressures in the world's largest oil field.

In East Texas there is a special order governing salt wate rdisposal. An earned salt water allowable of one barrel of oil is allowed for each 50 barrels of salt water returned to the Woodbine sand reservoir which is allocated to the lease producing the salt water, but not more than six barrels of oil per day of such earned salt water allowable is assigned to any well. However, in order to prevent too much water production the commission limited the amount of credit to be received from such production to eight barrels of oil from any well for credit purposes.

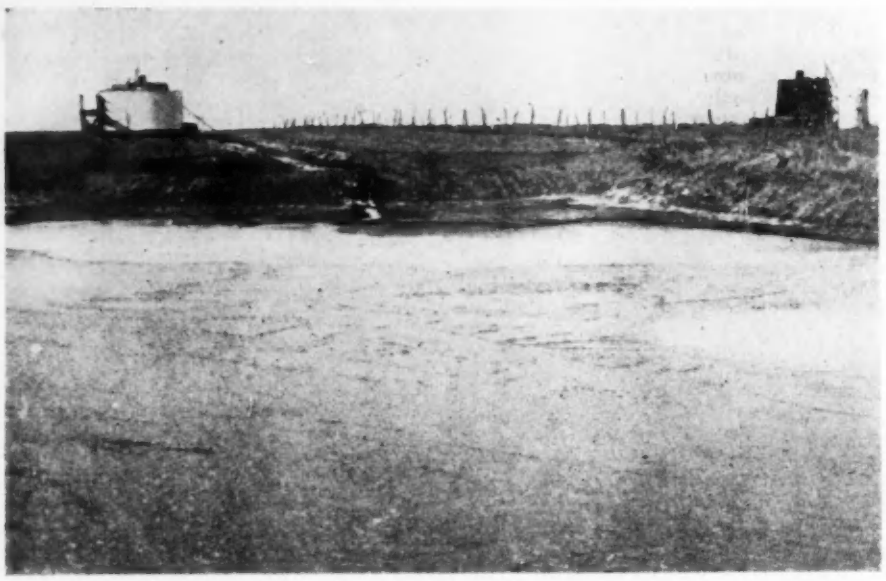
Provision is made for operation of the company by individuals exclusively for salt water purposes and wells producing in excess of 100 barrels of salt water daily can be shut in and their allowable produced from any other well on the same lease within certain limitations. No well producing in excess of 25 percent is eligible to produce a bonus in oil. In addition there is a water-oil ratio order established on the basis of five barrels of water for each barrel of oil.

Oklahoma Rules

Salt water disposal and pollution problems are handled in Oklahoma by the Planning and Resources Board.[7] Before an operator can use any stream, lake, water course or subsurface reservoir to dispose of oil field brines, application must be prepared in duplicate and sent to the board, which must first approve the plans and issue authority to proceed upon condition that such plan shall be at all times subject to further orders of the board and subject to the approval and



Modern settling-out tank in a Mid-Continent oil field. This tank handles 5000 barrels of salt water daily and was constructed from second-hand materials.



An oil-free brine pond with a separating pond for oil wastes

visitorial rights, duties and authority of the Division of Water Resources.

In any established field where pollution is taking place the Division of Water Resources may initiate and call to the attention of the board any needful corrective method of disposal of deleterious matter.

In applying to the board for a permit to install a salt water disposal system the operator must furnish an accurate description of the lease; names of land owners with their post office addresses and the portions of land or lease owned by each person in the area; describe the nature of the system and the substance or substances involved for disposal; describe stream or streams or subsurface formations giving the name, depth and all available data; detailed description of the salt water disposal must be given; all maps, field notes, plans and specifications are to be retained in the office of the Division of Water Resources after approval of the application. The forms may be secured from the Division of Water Resources, Oklahoma Planning and Resources Board, State Capitol Building, Oklahoma City, Oklahoma.

The operator bears all expense of installation of a salt water disposal system and must give notice of commencement of the work as well as notice of discontinuance.

In Oklahoma, as in other oil producing states, salt water is not considered a waste product but a valuable form of reservoir energy. It has been repeatedly used as the flooding media to augment depleted water drive and when proprly put to work it can incrase oil yield and revenue.

Kansas Water Pollution Statutes

Pollution control in Kansas is handled jointly by the Kansas State Corporation Commission and the State Board of Health and a special Oil Field Section was set up which functions within the Division of Sanitation.

The well owner confronted with salt water disposal must make written application to the Kansas State Corporation Commission for authority to do so and the commission and the State Board of Health must give written approval. In his application the well owner must submit plans and specifications and it rests with the commission to determine if such plans for disposal will not result in the loss of waste gas or petroleum resources. The State Board of Health, in giving its approval, shall determine that the proposed method is a feasible one to be employed in protecting the water resources of the state from preventable polution.[8]

The Oil Field Section of the State Board of Health has a generalized program which includes the checking of complaints, inspections of brine and oil waste disposal methods, special field surveys and studies, major stream pollution causes, casing program for disposal wells, furthering community disposal well projects, water flood projects, bottom hole cementing, recommendations to abandon small oil producers which have an excessive oil-water ratio, state service work and a general educational program. The field staff makes it a point to inspect all disposal methods employed and to work with the operators in matters pertaining to the improvement of those methods.

Application forms and other information may be obtained from the Kansas State Corporation Commission, Wichita, Kansas.

Disposal in Louisiana

The Stream Control Commission with offices at Baton Rouge is the direct governmental body in Louisiana empowered to control pollution from oil field waste, although the Conservation Department through its six Minerals District offices must issue permits for the drilling of injection wells.

Along Louisiana coastal waters permits must be obtained from the Director of Oysters and Waterbottoms, Department of Wildlife and Fisheries, 126 Civil Courts Building, New Orleans 16.

According to Louisiana regulations oil field brines discharged into streams must not have an oil content exceeding 30 parts per million.

Under the law operators in Louisiana are prohibited from discharging salt water from a lease until all oily waste has been completely separated except where the transfer of such salt water from the lease to a central treating plant has been approved in writing by the Stream Control Commission or one of its agents.

Whenever possible the state urges operators to dispose of salt water through disposal wells to underground horizons below the fresh water level, provided that this rule shall not apply in fields or areas where it is determined by the Stream Control Commission that such practice will result in future pollution.

Because of the importance of its rice industry the state, through the Stream Control Commission, issued special rules to operators in rice growing areas providing for ample flushing of streams before the irrigation period begins in the rice fields. To accomplish ample flushing of the streams before the irrigation period begins, the discharge of oil field brines into such streams or other bodies of water is prohibited after January 15 of each year and may not be so discharged until such time as the Stream Control Commission determins that the practice no longer constitutes a pollution hazard.[9]

Supervision in Illinois

Illinois solves its salt water pollution problems by making it mandatory that oil and gas well brines be returned to the earth through disposal wells.

Salt water disposal and water pressuring is controlled by the Division of Oil and Gas Conservation of the Department of Mines and Minerals, 401 United Mine Workers Building, Springfield.

Brine or salt water produced in the drilling for or the production of oil and gas is permitted to run into earthen reservoirs or ponds only for a limited time under such conditions as may be approved by the department, after which it must be returned to some underground formation or otherwise dispoed of as approved by the department.

Application for a salt water disposal well must be filed with the department showing the location of the disposal well; location of all oil and gas wells including abandoned and drilling wells and dry holes within ½ mile of the disposal well; elevations of the top of the producing formation in the disposal well and in all producing wells within a ½-mile radius if the disposal water is to be injected into a lower horizon of an oil or gas-bearing formation; disposal well log, if previously drilled; description of the disposal well casing; description in detail of cementing operations behind the casing; the estimated maximum and minimum amounts of water to be injected daily; names and addresses of oil operators and coal operators of all active coal mines within ½ mile of the disposal well, who shall be notified of the application and the date that such notice was given; such other information as the department may require to ascertain whether the disposal may be safely and legally made. Application forms are furnished free by the department upon request of the operator and applications may be made to include the use of more than one disposal well on the same lease or on more than one lease. The application must be executed by all operators who are presently to participate in the proposed disposal plan and notice of the application must be given by registered mail or personal service to each operator of drilling or producing wells or coal operators of all active coal mines within a ½-mile radius of the proposed disposal well, on or before the application is mailed to or filed with the department.[10]

Compared with other states Kentucky appears not to have made any serious

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effort to provide against salt water pollution or to designate procedure by which an oil and gas operator may be guided in disposing of well brines. Comparatively little salt water is produced by Kentucky wells and probably the largest quantities are in the Smith Mills area where wells are near small streams and creeks that drain into the Ohio River. There is some ambiguity in Kentucky statutes concerning the production of oil field brines. According to Section 353.150 (3910;3913) of the Kentucky Revised Statutes the owner of a well which produces oil, gas or salt water and who is not utilizing the production of any of these substances must plug the well so that fluids will not run over the surface of the land. Failure to do so gives the owner of adjoining land the right to enter upon the property where the uncapped well is located, tube it, pack it and shut it in and then bring suit against the owner to recover the cost of the operation.

Kentucky operators handle salt water disposal by impounding it in earthen storage although two major companies operate subsurface disposal systems.

Michigan Rules Specific

A Supervisor of Wells was named by the Michigan Legislature in 1939 and empowered to handle all matters pertaining to well brines and their disposal. The law prohibits running brine or salt water into earthen reservoirs or ponds except for such reasonable time and under conditions as may be approved by the Supervisor, after which it must be returned to some underground formation or otherwise disposed of. Well owners must consult the Supervisor in cases where they are uncertain as to proper disposal methods and that official has power to designate procedure and outline means and methods to overcome such problems, although all costs are borne by the operator.

No Problem in New Mexico

As in the case of Kentucky, oil and gas operators in New Mexico have not yet reached the stage where salt water disposal and pollution by brine has become a serious problem. The Oil Conservation Commission has jurisdiction over the prevention of various kinds of waste, such as surface and subsurface waste. The Lea County Operators Committee at Hobbs operates as a scientific organization which makes a study of the various matters affecting oil and gas production.

The rules and regulations of the various oil and gas producing states which have been given here are in condensed form only and by no means complete. They do, however, provide the operator with sufficient information to take the necessary steps when he is confronted with the problem of salt water disposal. Prompt action assures the cooperation of public authorities who have the responsibility of preventing pollution through improper control of oil field brines while the operator also protects himself against damaging lawsuits and meets his obligation of preventing unnecessary damage to other resources.

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[3] "Code of Federal Regulations, Title 30—Mineral Resources, Chapter II, Part 221, Oil and Gas Operating Regulations."

[4] Sections 1, 2, Act March 3, 1921 (41 Stats. L., 1249) as amended by Act March 2, 1929 (45 Stats. L. 1478).

[5] Texas Railroad Commission, General Rules and Regulations, Rule 52.

[6] Special Order, Texas Railroad Commission.

[7] "Rules and Regulations for Pollution Control," Oklahoma Planning and Resources Board, Sec. II.

[8] Kansas Water Pollution Statutes, 55-901; 55-1002.

[9] Stream Control Commission, Rules Governing Disposal of Oil Field Wastes, G.P. 600.

[10] Illinois Statutory Provisions, paragraphs 62 et seq, Chapter 104, Illinois Revised Statutes, 1943.

Chance of Finding Oil

• CONTINUED FROM PAGE 50

information only; one in 4.4 if based on both geophysical and geological information; one in 20.6 if based on non-technical information. For the same interval of time in Texas (see Table 2) the overall probability of a producer was one in 6.4 if based on geological information only; one in 5.2 if based on geophysical information only; one in 3.7 if based on both geophysical and geological information; one in 17.9 if based on non-technical information.

In prospecting for oil the selection of the most effective exploratory method is neither the beginning nor the end of the application of the theory or probability in exploration stage. Conservative and intelligent exploration program calls for a balanced estimate of the most probable profit or loss which might accrue as a result of the discovery or the failure to discover an oil field. Dunbar and Gabriel, Ickes, Hayward, and others show in details the application of the theory of probability for the estimation of future discoveries in the area under investigation.

Assuming that such estimate has been made the application of the principle of the mathematical expectation is the final and decisive step. As an example, assume that the most probable present worth of future oil discovery located in Texas is $3,000,000, the cost of drilling the well is $100,000, the cost of preliminary geophysical and geological information is $50,000, the cost of leasing and overhead expenses is $40,000. Assume further that it was decided to use overall probabilities computed for the state of Texas as a unity. According to formula stated elsewhere in this article, we have

M (math. expectation) $= p_1 g_1 - p_2 g_2$

where g_1 is the present worth of future discovery assumed equal to $3,000,000.

p_1 is the probability to hit a producer $= 1/3.7$ (The probability based on both geophysical and geological information.)

$$p_2 = \frac{3.7 - 1.0}{3.7} = \frac{2.7}{3.7} = 0.7297$$

$g_2 = \$120,000 + \$50,000 + \$40,000 = \$210,000$

By substitution into the equation we obtain:

$$M = 0.2703 \times \$3,000,000 - 0.7297 \times \$21,000 = +\$657,000$$

In employing non-technical information only, the mathematical expectation for an oil well drilled under somewhat identical conditions would be

$$M = 1/17.9 \times \$3,000,000 - \frac{17.9 - 1.0}{17.9} \times \$160,000 = +\$16,000$$

where one hit in 17.9 drill-holes is an overall probability in exploration for oil based on non-technical information (see Table 2).

Therefore, according to the principle of mathematical expectation, the use of both geophysical and geological information in drilling for oil in Texas under the hypothetical conditions assumed, would probably result in a gain of $657,000; whereas the use of non-technical information would probably result in a gain of $16,000 only.

Theory Widely Applied

The theory of probability is widely applied, consciously or unconsciously, in the oil industry for the evaluation of better oil possibilities, the selection of better exploration methods, and the elimination of over-costly techniques and practices.

For a student of exploratory methods it is of interest to note that according to Table 1, for the United States from 1938 to 1943, inclusive, the overall probability of successful well was one in 6.1, if based on geological information only; one in 5.0, if based on geophysical information only; one in 4.4 if based on both geological and geophysical information; one in 20.6, if based on non-technical information. For the same interval of time for Texas (see Table 2), the overall probability of a producer was one in 6.4, if based on geological information only; one in 5.2, if based on geophysical information only; one in 3.7, if based on both geophysical and geological information; one in 17.9, if based on non-technical information.

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Moscow Quadrangle Map

The United States Geological Society offers a new topographic map, the Moscow quadrangle, covering an area about 14 by 18 miles in Grant, Haskell, Seward and Stephens counties of Southwestern Kansas. The scale is approximately one inch to the mile. The shape and elevation of the land surface are shown in detail by contours printed in brown with contour intervals of 20 feet in rough areas and dashed contours at 10-foot intervals shown in flat areas. Streams and lakes are printed in blue and main highways and political boundaries in red. The base map is printed in black and shows all roads, houses, towns, and the location of railroads, etc. The locations and sea-level elevations of bench marks are shown as are also the sea-level elevations of most section corners.

Copies of the map can be purchased fro mthe Geological Survey in Washington, D. C., or from the State Geological Survey, University of Kansas, Lawrence, Kansas, for 10 cents.

The Red Beds and the Anadarko Basin

By DR. CHARLES N. GOULD, Professor of Geology, University of Oklahoma

THE Permian red beds consist of a great mass of red clay shale of unknown thickness in which are beds, ledges and lenses of two kinds of rocks, sandstone and certain evaporites, chiefly gypsum, salt and dolomite.

Geologists know that any formation, if traced far enough, will prove to be a lens, and this fact is especially true in the red beds. It is thought that these beds were laid down as deltate or estuarine deposits at the mouths of rivers emptying into a southwesterly-retreating ocean.

According to this theory, now accepted by most geologists, that part of North America lying north and east of the area now occupied by the red beds was then dry land. Numerous rivers taking their rise in this continental mass, and flowing into this ocean, dumped their load of sediment, including sand, mud, clay and silt into the ocean, forming what we now know as the red beds.

At various times certain inland seas were formed, and in these enclosed bodies of water various mineral salts, known by the general term of evaporites were deposited by the evaporation of sea water. Salt, gypsum, anhydrite, dolomite and barite are the most common of these evaporites.

The greater part of the red beds belongs to the early Permian age. The time that has elapsed since these rocks were deposited is estimated at around 200 million years.

The general area occupied by Permian rocks, both surface and subsurface in Kansas, Oklahoma, Texas, New Mexico and Colorado, is shown on the map (Figure 1) published in 1927. The present paper will be confined chiefly to the red beds of western Oklahoma and adjacent parts of Kansas and Texas, and more particularly to the formations exposed on the surface in or near the vicinity of the Anadarko Basin.

Early Work on the Red Beds

The first attempt to describe and classify the red beds of Southern Kansas was made by F. W. Cragin, then a teacher of natural history in Washburn College, Topeka, Kansas. In 1896 he published a paper, "The Permian System in Kansas," presenting the following geological section: Big Basin sandstone, Hackberry shale, Day Creek dolomite, Red Bluff sandstone, Dog Creek shale, Cave Creek gypsum, Flowerpot shale, Cedar Hills sandstone, Salt Plains measures, Harper sandstone, Wellington shale. Cragin's section extends westward along the southern tier of counties in Kansas including: Sumner, Harper, Barber, Comanche, and Clark counties.

In 1900 the writer came to the University of Oklahoma and one of his first tasks was a study of the red beds.

In 1905 a paper, "Water Supply Paper," 148 of the United States Geological Survey "Geology and Water Resources of Oklahoma," was published and dealt largely with the stratigraphy of the red beds, which were classified as follows: Quartermaster formations, Greer gypsum, Day Creek dolomite, Whitehorse sandstone, Dog Creek shales, Blaine gypsum, Enid formation.

The classification of Cragin as far as conditions seemed to warrant was followed. Several of his Kansas beds could be traced continuously from Kansas into Northern Oklahoma. The Day Creek and Dog Creek formations were easily followed in both states. Cragin's term Red Bluff was preoccupied and therefore the name Whitehorse was substituted. For certain technical reasons the name Blaine gypsum was also substituted for Cragin's Cave Creek. The Hackberry shales and Big Basin sandstone do not occur in Oklahoma and at that time it was not possible to

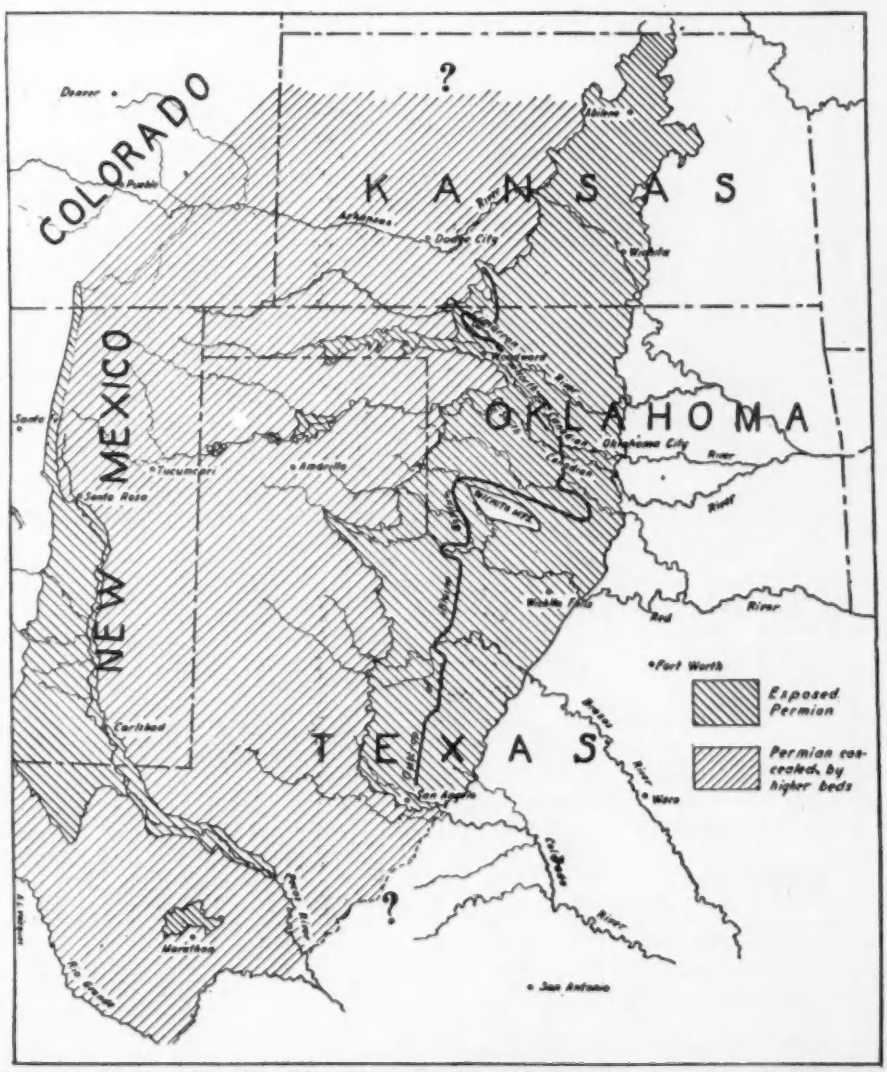


Figure 1. Map of southern Great Plains showing surface and subsurface occurrence of Permian rocks

separate and classify the great mass of red shales and sandstones lying below the Blaine gypsum and therefore these beds were grouped under the name Enid. This report was accompanied by a geological map, the first published of Oklahoma territory.

Looking back over the interval of 40 years it is not difficult to point out the two chief errors in this report, one of stratigraphy, the other of structure. The presence of the great structural trough in Southwestern Oklahoma was not then recognized and therefore the gypsum beds in the western part of old Greer County (now Harmon and Beckham counties) were believed at a higher stratigraphic level than the Blaine gypsum. The gypsum beds, exposed along the Washita river in Washita, Custer and adjacent counties were erroneously considered as being the stratigraphic equivalent of the Greer County gypsums, although we know that the gypsum along the Washita river, which we call the Cloud Chief, is at a higher level than the (old) Greer County beds.

Some years later the region attracted the attention of geologists and a number of interesting papers were published on the various phases of the red beds, including a bulletin for the Oklahoma Geological Survey entitled: "Gypsum and Salt of Oklahoma," by Dr. L. C. Snider; "Report on the Duncan Gas Field," by Carroll H. Wegeman, United States Geological Survey. Fritz Aurin wrote a bulletin on "The Geology of the Oklahoma Red Beds"; Dr. D. W. Ohern traced the Whitehorse sandstone into the western part of the old Chickasha Nation, and in 1922 Dr. J. V. Howell published a paper in Economic Geology on "Some Structural Factors in the Accumulation of Oil in Southwestern Oklahoma" in which he suggested the presence of a syncline north of the Wichita Mountains.

As a result of a field conference called by H. D. Miser of the United States Geological Survey in 1924 during which considerable study was given literature on the region, it was decided to prepare a paper for the Bulletin of the American Association of Petroleum Geologists entitled: "A New Classification of the Permian Red Beds of Southwestern Oklahoma." The most salient points brought out in this bulletin were the recognition of the Anadarko Basin and a revision of the classification of the beds.

In order to understand more clearly the areal geology of the region, it will perhaps be well to first mention briefly the major structure of this part of Oklahoma. The distinguishing structural feature of the entire area is a large synclinal basin, the axis of which extends southeast-northwest across the area. The southeastern end, or head, of this basin, as it is now understood, is located in Northeast Stephens County, a few miles northwest of the west end of the Arbuckle Mountains. From this point the axis of the basin is known to extend northwest for about 150 miles, until it appears to lose its indentity in the area occupied by the Quartermaster formation in Northern Beckham and Southern Roger Mills counties. It is possible, however, that later investigations may show that this structural trough continues across the state line into the Panhandle of Texas, paralleling the buried granite ridge which is now believed to be the northwestern projection of the Arbuckle-Wichita Mountain axis.

Toward the axis of the Anadarko Basin the rocks dip from both sides, the dips on the south side in the vicinity of the Wichita Mountains being steeper than on the north side. The same red beds formations are exposed in the same sequence on both sides of the basin. The structural feature is now known as the Anadarko Basin. The name is from the Caddo County seat, which lies well within the basin. Formations of this structural feature are classified as follows: Quartermaster formation, Cloud Chief formation, Day Creek dolomite, Whitehorse sandstone, Dog Creek shale, Blaine gypsum, Chickasha formation, Duncan sandstone.

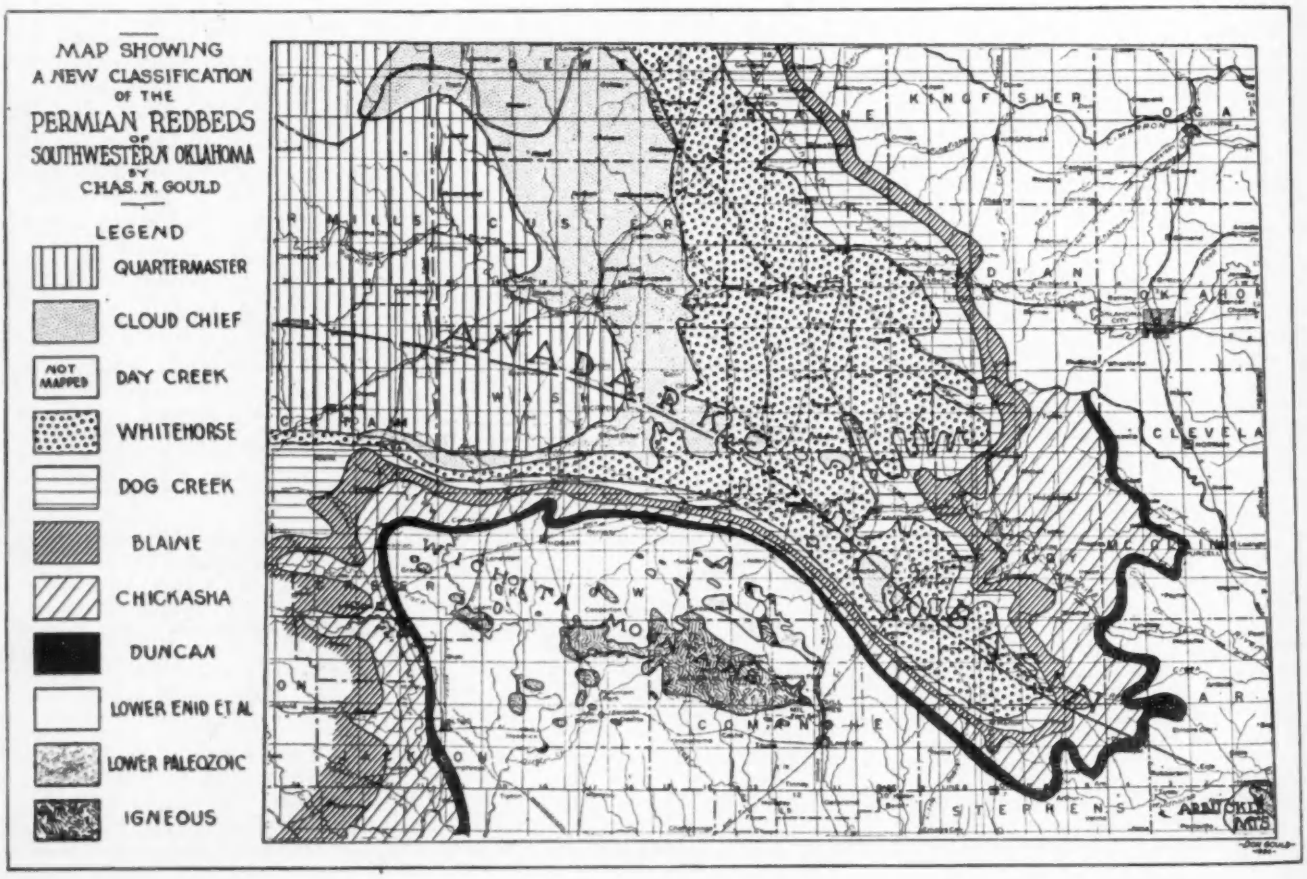
The map accompanying this paper is reproduced herewith as Figure 2.

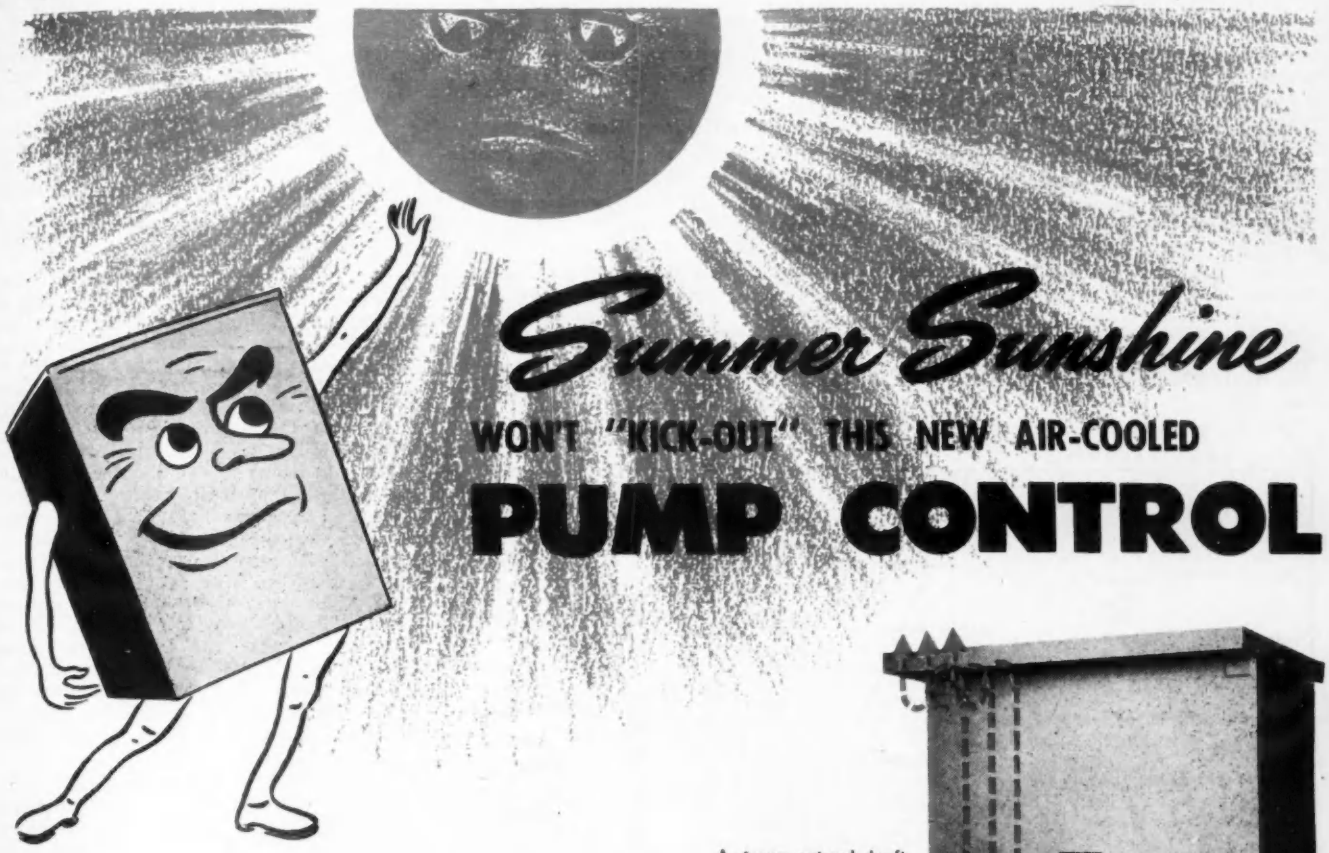
Correlation with Texas

One problem that had perplexed geologists for many years was the correlation of the red beds in Southwestern Oklahoma and North Texas. As early as 1891, F. W. Cummins had divided the Texas Permian, south of Red River, into three formations, named in ascending order, Wichita, Clear Fork and Double Mountain. Other geologists had done considerable work on these beds. But more than a quarter of a century had elapsed before any serious attempt was made to determine the stratigraphic correlation of the red beds on both sides of Red River in the region southwest of the Wichita Mountains, and between these mountains and the Llano Estacado.

In October, 1925, a field conference of

FIGURE 2





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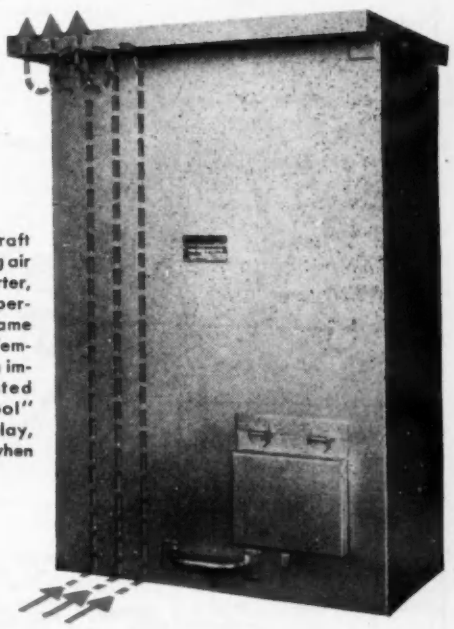

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about 25 geologists was held in this region under Dr. E. H. Sellards, associate director of the bureau of economic geology of the University of Texas, and Dr. J. W. Beede, for the purpose of studying the Double Mountain formation, and correlating certain members of this formation with known beds in Oklahoma and Kansas. The result was a paper entitled: "The Correlation of the Permian of Kansas—Oklahoma and Northern Texas," published in the Bulletin of the American Association of Petroleum Geologists of February, 1926. The map included therewith (Figure 3) sets forth conditions as they were then understood.

It will be noted that on this map the Anadarko Basin was shown as terminating in Roger Mills County, Oklahoma.

Conclusions Reached

In this paper the following conclusions were indicated:

1. The general stratigraphic units of the Permian red beds are continuous in Kansas, Oklahoma, and Texas.

2. The gypsum-bearing formations are more pronounced in Texas than in the states to the north, both in thickness of the horizons containing large amounts of gypsum and in the number of the individual gypsum beds. The culmination of the gypsum appears to occur near Double Mountain in Southwestern Stonewall County, Texas, from which point the gypsum decreases in amount both north and south.

3. The Double Mountain formation in Texas corresponds to the following formations in Oklahoma (oldest beds named first): Duncan-Harper, Chickasha, Blaine, Dog Creek, Whitehorse, Day Creek, Cloud Chief, Quartermaster.

4. The Duncan of Oklahoma is the approximate equivalent of the San Angelo of Texas. The Blaine gypsum of Oklahoma is the approximate equivalent of the Eskota gypsum of Texas. The Whitehorse sandstone of Oklahoma is the approximate equivalent of the Lake Trammel sandstone of Texas. The Day Creek of Oklahoma probably does not persist as far as Texas, but other dolomites do occur in the Double Mountain in Texas. The stratigraphic equivalents of the Chickasha, Dog Creek, Cloud Chief, and Quartermaster have not received distinctive names in Texas, and in view of the fact that the same general horizons are continuous in the two states, it will be well, at least for the present, to use the Oklahoma names. The upper Double Mountain formations, including the Dog Creek, Whitehorse, Day Creek, Cloud Chief, and Quartermaster, are not shown on the map (Figure 1).

It will also be understood that, using Kansas names, all of the Cimarron series of Cragin, including, from below, the Harper, Salt Plains, Cedar Hills, Flowerpot, Cave Creek, Dog Creek, Red Bluff, Day Creek, Hackberry, and Big Basin, are equivalents of the Double Mountain.

The Wichita and Clear Fork beds of Texas are correlated with the lower part of the Enid, and include the Council Grove, Chase, Marion, and Wellington groups of Kansas and Oklahoma.

Subdividing Enid Group

The next step in the problem of the rocks exposed on the surface in the Anadarko Basin was the matter of the subdivision of the Enid Group.

By this time a number of oil fields, including Garber, Tonkawa, Billings and Lucien, had been discovered in North Oklahoma. Geologists working out of Ponca City and Enid had become accustomed to using such local field names as Garber sandstone and Hennessey shale to demark certain beds.

At the request of geologists in Northern Oklahoma a field conference was held under the direction of the Oklahoma Geological Survey in March, 1926. The results were embodied in a paper by F. L. Aurin, H. G. Officer and Chas. N. Gould, published in the August, 1926, Bulletin of the American Association of Petroleum Geologists, entitled: "Subdivisions of the Enid Formation." The section of the Enid as decided at this field conference is as follows: Chickasha formation, Duncan sandstone, Hennessey shale, Garber sandstone, Wellington formation. In the meantime gas, and later oil had been discovered in the Panhandle of Texas. The first well located on the John Ray Dome, 30 miles north of Amarillo and more than 200 miles from the nearest production, found gas. Other developments followed and as more and more wells were drilled it began to dawn on the geologists working out of Amarillo that the production was coming from the north limb of the buried

Figure 3. Map of Permian rocks of Kansas, Oklahoma and northern Texas

Baash-Ross News

HOUSTON · NEW YORK

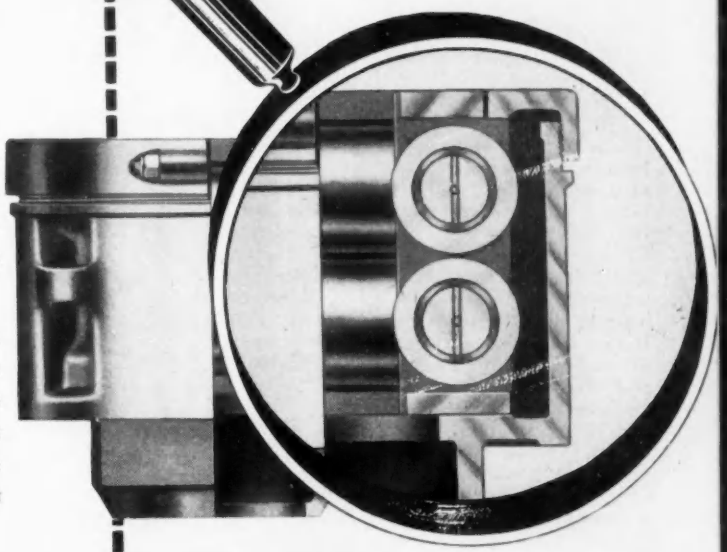
OUR 25th YEAR

What happens WHEN A KELLY DRIVE BUSHING Drives?

Did you ever stop to think that your kelly bushing serves two basic purposes on your drilling rig . . . *and that these two objectives are in direct opposition to one another?*

The kelly bushing (1) drives or rotates the drill string, and (2) permits the drill string to feed through the table while being rotated. Yet the harder the bushing pushes against the string to drive it, the more friction is set up and the more difficult it becomes for the kelly to feed freely *through* the bushing . . . *unless some means is provided of reducing this friction.*

Make the experiment outlined below and you'll see why...



The BAASH-ROSS Roller Kelly Bushing

means smoother bit control, greater drilling efficiency

Try this simple test: Place your hand flat on a smooth surface and push it away from you. Then press harder and push . . . and harder still and push again. Note how quickly increased pressure builds up friction between your hand and the surface until it soon becomes very difficult to move your hand smoothly over the surface. Instead, it tends to move in sudden jerks.

That's exactly what happens in the conventional flat-surfaced kelly bushing. When the string is rotating idly with no load, the kelly feeds easily through just as your hand moves smoothly when there is no pressure. But as the bushing drives the kelly faster and faster, driving pressure between bushing and kelly surfaces rapidly pyramids until smooth kelly feed is no longer possible. It becomes jumpy and erratic, which throws sudden torsional strains into the drill string, increasing the risk of twist-offs . . . puts destructive surging loads on table and swivel bearings . . . shortens the footage you get from your drilling bits . and substantially reduces the life of other rig equipment.

What's the solution? Going back to the hand test, try this: Put two ordinary round lead pencils between your hand and the flat surface and try the same experiment over again. Notice that—*no matter how hard you press down*—the two pencils eliminate friction to such an extent that your hand always moves freely and effortlessly.

And that's exactly how the Baash-Ross Roller Kelly Bushing increases drilling efficiency! By using *rollers* instead of flat drive surfaces between kelly and bushing, the Roller Kelly Bushing permits free effortless kelly feed at all times regardless of the driving pressure of rotating the string. Bit feed becomes smooth and controlled at all table speeds!

What this all adds up to . . . Because it uses *rollers* instead of flat sliding surfaces, the Baash-Ross Roller Kelly Bushing provides an accuracy of bit control *unobtainable with any other type of bushing.* This smooth accurate feed greatly increases bit footage . . . reduces strain on the drill string . . . lengthens equipment life . . . and insures greater all-around drilling efficiency wtih less equipment maintenance.

It means **Straighter Hole** because the weight is under instant, accurate control at all times. It means **Far Better Coring** because the smooth steady feed minimizes premature dulling of core bits, break-up of cores, and jamming of barrels. It means **Fewer Fishing Jobs** because the sudden torsional strains that damage drill string connections are minimized. And it means **Less Bushing Maintenance** because, in contrast to conventional kelly bushings, maintenance of Baash-Ross Roller Bushing is unusually simple—just periodic lubrication through easily-reached grease nipples.

Baash-Ross Roller Kelly Bushings are available in sizes to fit all square kellys 2½" to 6". . . all hex kellys 3" to 7". See your nearest Baash-Ross representative for complete details, refer to page 256 of your Composite Catalog, or write direct.

granite ridge which had become known as the Amarillo Mountains. Still later it became evident that this production was chiefly on the south limb of a great structural trough which turned out to be the western end of the Anadarko Basin.

Several papers appeared on the subject and in December, 1926, circular No. 13 of the Oklahoma Geological Survey was published. The report, entitled: "The Permian of Western Oklahoma and the Panhandle of Texas," by Gould and Lewis, contains a résumé of known geological conditions, both stratigraphic and structural along the Anadarko Basin.

This paper also included a discussion of the paleogeography of the region prepared by Dr. Roy A. Wilson of the University of Oklahoma.

During the past 20 years several papers have appeared dealing with the stratigraphy of the red beds. H. L. Griley subdivided the Quartermaster into the Doxey and Elk City; R. L. Clifton has published on the ammonoid and pelecynod fannas; Clyde Becker introduced the group name El Reno to include the Chickasha, (Flowerpot) Blaine and Dog Creek; R. W. Sawyer divided the Whitehorse into the Marlow and Rush Springs; Reed and Meland discussed the "Channel" sandstones which they named the Virden; Darsie Green, Norman Newell and others have discussed certain phases of the red beds. The most ambitious attempt at revision was by Robert Roth, who claimed to have discovered a regional unconformity at the base of the Whitehorse. Roth named everything above this unconformity the Custer and assigned it to the Triassic rather than to the Permian.

Conclusion

After more than 50 years of study by hundreds of geologists in Oklahoma, Kansas and Texas a few things have been determined concerning the Permian red beds. We know their stratigraphy fairly well, and something of their structure. We are beginning to get some definite ideas as to their thickness. We have some notions as to their origin. We do not know the source of the streams which furnish the material which make up the red beds.

The solution of these problems has not been easy. The fact that after so many years of careful study by so many different men we are still groping for the final solution of so many of the problems is sufficient evidence of the complexity of the subject. The fault does not lie entirely with the geologists. It lies partly, perhaps largely, with the nature of the red beds themselves.

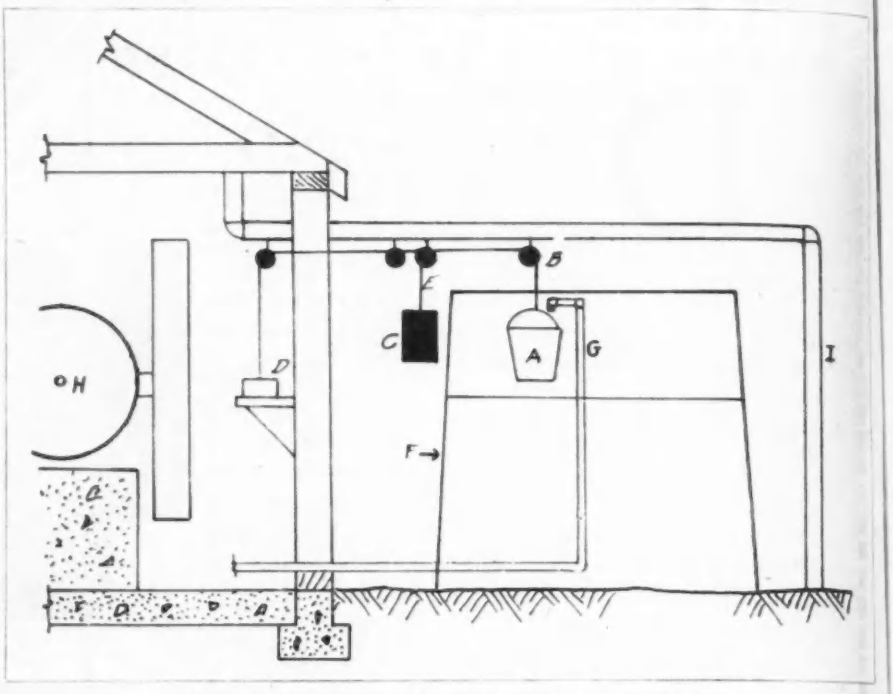
Many times during the past 20 years the writer expressed the opinion that there is no reason why oil and gas might not be found on the south side of the Amarillo Mountains uplift or on the north side of the Anadarko Basin.

The general structure of the Anadarko Basin is similar to that of the Permian Basin in West Texas and to the Illinois or Michigan basin, all of which now have large production.

The interest now being taken in development in the red beds area in Western Oklahoma is a good omen. Whether or not development in this area will prove profitable is anybody's guess. The drill is the only oil finder.

A Valuable How Article—

Perforated Bucket Keeps Engine from Overheating



Schematic drawing of water bucket-pulley control system

A—Bucket. B—Pulley. C—Weight. D—Knife switch. E—Support wire. F—Water tank. G—Cooling water discharge line. H—Engine. I—Support frame.

AN INEXPENSIVE, efficient method of controlling overheating of engines or compressors caused by low volume or complete stoppage of the circulating water supply consists of installing a perforated bucket under the water discharge line as shown in the accompanying drawing. It is being used with satisfactory results at small secondary recovery project plants, where it is economically impossible to have continuous supervision.

Two or three small holes in the bottom of the bucket usually are sufficient for it to function properly. The total area of these perforations should be such that they allow only a fraction of the circulating water discharge to pass through them under the small hydrostatic head of the bucket when completely full. Proper correlation between hole size in the bucket and engine water discharge volume will permit the system to function at any desired water discharge rate.

As illustrated, the bucket is supported in the circulating water tank by a wire line, preferably a shooters line, in a position to receive all of the circulating water discharged. The line supporting the bucket runs through a pulley installed over the tank, and then through several pulleys into the power building where it is connected to either the engine ignition wiring or to a horn alarm system. Immediately outside the circulating water tank, or if preferred on the inside, a weight is attached to the wire line which weighs the same as the bucket filled with water.

As long as the cooling water is circulating properly, the bucket is completely full since the cooling water discharge is larger than the volume which can pass through the holes in the bucket. A portion of the cooling water drains through the perforations in the bucket while the rest of the water spills over the side of the bucket. The weight and water filled bucket are then balanced on the pulley system.

However, if the circulating water volume falls, the perforations in the bucket will drain the bucket faster than water comes in. This throws the pulley-bucket weight system out of balance. The weight will drop gradually. Since the line supporting the weight is connected directly to the ignition or alarm system, the weight will pull the ignition wire from the spark plug or throw a knife switch, depending to which the wire has been connected by the operator. The system can be made to either shut the plant down completely or sound an alarm.

Planning Conference Set

The Fifth Industrial Planning Conference of the University of Texas will be held May 29 in the Texas Union Building at the University of Texas, Austin.

Participating in this conference jointly with the Texas Industrial and Commercial Research Council are the following: State Board of Water Engineers, State Health Department, and Ground Water and Surface Water Divisions of the United States Geological Survey.

Oil Company Veteran Employment Activities

By A. R. McTEE, Staff Writer

Efficiency of the oil firms' reemployment organizations assures the returning veteran of sympathetic help in readjusting himself.

EX-SERVICEMEN and women returning to their jobs with oil companies are finding a warm welcome. The number of returning veterans is constantly increasing. Efficient organization within the companies is smoothing the way for them to find their niches, to fit themselves back into their old places or take new ones, and in general to become an active, integral, working part of the personnel.

Alertness by the companies to help the returning veteran is no doubt responsible for the high percentage of return to their old connections. Most companies have maintained contact with their servicemen and women. No pains or costs have been spared to keep this contact as close as possible, and now the effort is paying off. A very high percentage of those formerly employed by oil companies and now back in civilian life, have gone back to their previous employers.

Seniority Observed

Not all returning are asking for their old jobs. Some are seeking different types of work, but the companies are seeing to it that the new job given the veterans is the equivalent in remuneration of the old one, or better. Seniority privileges are being observed as though the employe had never been away. Without exception, oil companies are going far beyond requirements of the law in making places for former employes who have returned from military service, and are showing preference to veterans if possible when adding new people to their staffs.

The companies are not approaching the problem from the viewpoint of rehabilitation. Few need this. They do need to be brought up to date on what has happened in their companies since they have been gone, to be given the opportunity of making the best use of whatever skill or development they have acquired in their military experience, and to be put to work as quickly as they desire.

Typical of the attitude of companies toward the veterans is that stressed by Cities Service Company in its Annual Report for 1944. "One of the resources of the company in postwar activity," it states, "while an intangible, nevertheless will be of paramount value. That is the returning serviceman, former employe. The management has not accepted the view that he is a liability, a charge upon society, a poor relation, unwelcome—one who, because of reasons of decency or Federal mandate must be 'taken care of.' Most men—and we like to think all men of Cities Service—who went to the wars have developed their powers and abilities. Rather than returning to civil life less qualified to carry on, they are infinitely more able to contribute to the successful operation of the company. They have had training in special fields, mechanical work in communications and transportation, for example; in the direction of men; technical training fitting them for research; in working in unison with their fellows, a new appreciation of the need for discipline. They will constitute, therefore, the best possible additions to industrial and commercial staffs."

Company Reports

What the various companies are doing for the veterans can best be understood by what the companies say themselves. The following condensed remarks are taken from the 1944 annual reports of the companies mentioned.

Consolidated Natural Gas Company:

Has 665 on military leave. Up to December 31, 1944, 96 had returned to the service of the company. The dependents of those on leave have been helped regularly by monthly allotments from the companies.

The Atlantic Refining Company: 1612 excluding seagoing personnel were on leave at the end of 1944, 138 had returned to work, 20 had been killed. Employes in military service receive salary allowances. Return of all men is anticipated and provision for their placement is planned.

Barnsdall Oil Company: Maintains the interest of servicemen in the Pension and Retirement Plan.

Cities Service Company: In the belief that the returning veterans constitute the best possible additions to industrial and commercial staffs, the presidents of the various companies of Cities Service asked employes in the armed forces to indicate whether they would like to return to Cities Service; whether they desired their old jobs; whether their war experiences made them feel equipped for a different assignment in the company, and in short, what plans they had which might be dove-tailed into the over-all planning of the company for after-the-war operation.

New Jobs Sought

Of the replies received 99 percent indicate a desire to return to the company. Nearly one out of three express preference for different jobs in other fields of company activity for which they feel their war experience has fitted them.

The board of directors believes that these men and women will bring enthusiasm, a drive and resourcefulness as important as tangible assets.

Humble Oil & Refining Company: Over 3000 Humble employes had entered military service by the end of 1944. Of these, 40 had given their lives. It is noteworthy that 363 employes have returned from military service to the Humble organization, and about that many veterans not formerly connected with Humble have been employed. The company's military leave policy goes beyond the provision of the law regarding the reemployment of veterans. Every consideration will be given to these men and women, as has been while they were on leave. Policies and plans have been formulated for giving returning veterans full opportunities to utilize their abilities and experience to best advantage.

The company has paid out $635,000 to employes on military leave under the benefits program.

Gulf Oil Corporation: The number of Gulf men and women employed in the United States who have been granted leaves of absence to serve with the armed services totaled 5785 at the end of 1944. The supreme sacrifice had been made by 82.

Payment of approximately $1,000,000 was made to servicemen and women and their dependents during 1944 under the Gulf Plan for Employes in Military Service, making a total of $3,065,274 of such payments since the inception of the plan.

With regard to returning Gulf veterans who qualify under the company's military service plan, a warm welcome will be extended and every effort made to reinstate them in their old positions or ones of similar or better status. Such reinstatement will automatically restore their rights to group insurance, seniority, creditable service under the annuities and benefits plan, and other company plans for the employes. Furthermore, upon return to the company, employes who have been on military leave will receive the benefit from the date of reemployment of any general increases in rate of pay to which they would have been entitled had they remained continuously on the active pay roll. This policy clearly reflects the company's desire to have back in its ranks all former employes on military leave and to help in every way possible in their adjustment to civilian life.

Phillips Petroleum Company: More than 2700 company employes have entered the armed forces on approved military leaves and nearly 200 have returned to their jobs after release from service.

A plan providing for the effective reinstatement of employe-veterans has been formulated and announced to the general body of employes and to those on military leaves. Many provisions of this plan go beyond the requirements of law; for instance, employe-veterans will be given full consideration for employment in any operating locality and may apply for leaves of absence for educational, recreational, or other purposes before resuming their company duties.

Other Benefits

Employe benefits which include retirement income, group life inusrance, accident, sickness and surgical benefits, hospitalization for employes and their dependents and for dependents of employes in military service, benefits during unavoidable absence, vacation pay, and military absence benefits. The company's outlay for all employe benefits was more than $3,600,000 during 1944, or an average of $325 for each direct employe.

The Pure Oil Company: The company has pledged itself to maintain full employment for the men who have gone into the service, as well as for those who have carried on its activities in their absence. The company has been extremely liberal in extending assistance to those in the service.

Shell Union Oil Corporation: The number of employes now serving in the armed forces has reached 6620, equivalent to roughly 25 percent of the prewar male staff. The company's policy provides that all employes having at least a year of service with the company, who were on the pay roll on December 8, 1941, are granted a leave of absence with two months' pay upon entering the armed forces, and the company undertakes to pay a portion of the cost of their National Service Life Insurance. In addition, after two months, for all those who are married or have dependent children, the company makes up the difference between military pay and the former company compensation, with the proviso that the amount of the company's payment shall not exceed one-half of the former company compensation. The total cost of this program during 1944 amounted to $2,098,000.

The great appreciation of the well-merited assistance thus made possible has been proof to the directors that the cost is fully justified. It is undoubtedly a reflection of this appreciation and a general recognition of the company's progressive employe policies that over 85 percent of all Shell employes known to have been honorably discharged and returned to civilian status have come back to work with the company.

Standard Oil Company of Indiana: At the end of the year 7120 of the companies' employes had been granted military leave. Of these, 92 had been killed in action or had died in service. Another 596 had completed their service and returned to their jobs under conditions that assured them high consideration.

Sun Oil Company: During the year the board of directors promulgated a policy to govern the reemployment of Sun Oil veterans upon their discharge from the armed services. This policy effectuates the provisions of Selective Service legislation pertaining to the reemployment rights of veterans. Additionally, it indicates the desire of the company to have with it again those permanent employes now in uniform and to give all possible assistance toward their rehabilitation. Copies of this statement of policy were sent to all Sun Oil men and women in the armed services with a letter expressing an interest in their welfare.

156 Return

At the end of the vear 156 employes had returned to Sun from the armed services. They have been restored to their former or better jobs.

Standard Oil Company of California: The company has 7348 employes in service. More than 450 are back at their jobs. Comprehensive plans have been made to smooth the way for others who will follow. Advisory committees have been set up to assure them prompt personal attention and to expedite their placement.

Tide Water Associated Oil Company: More than 1375 employes are on military leave of absence.

In acknowledgment of its employes' patriotism the company adopted policies, amended from time to time, which provide substantial benefits to every one of them, including:

The granting of a leave of absence for the period of military service.

Reinstatement in their former positions, or positions of like status and pay, upon application made within 90 days after completion of military service.

Continuous company service credit for the period of military service.

Payment of one year's premium on government life insurance.

Compensation for vacations not received during the year of induction.

Presentation, at time of induction, of Series "E" war savings bonds, in the aggregate face value at maturity of $150.

Payment of $200, if married, or $100 if single, at the time of induction.

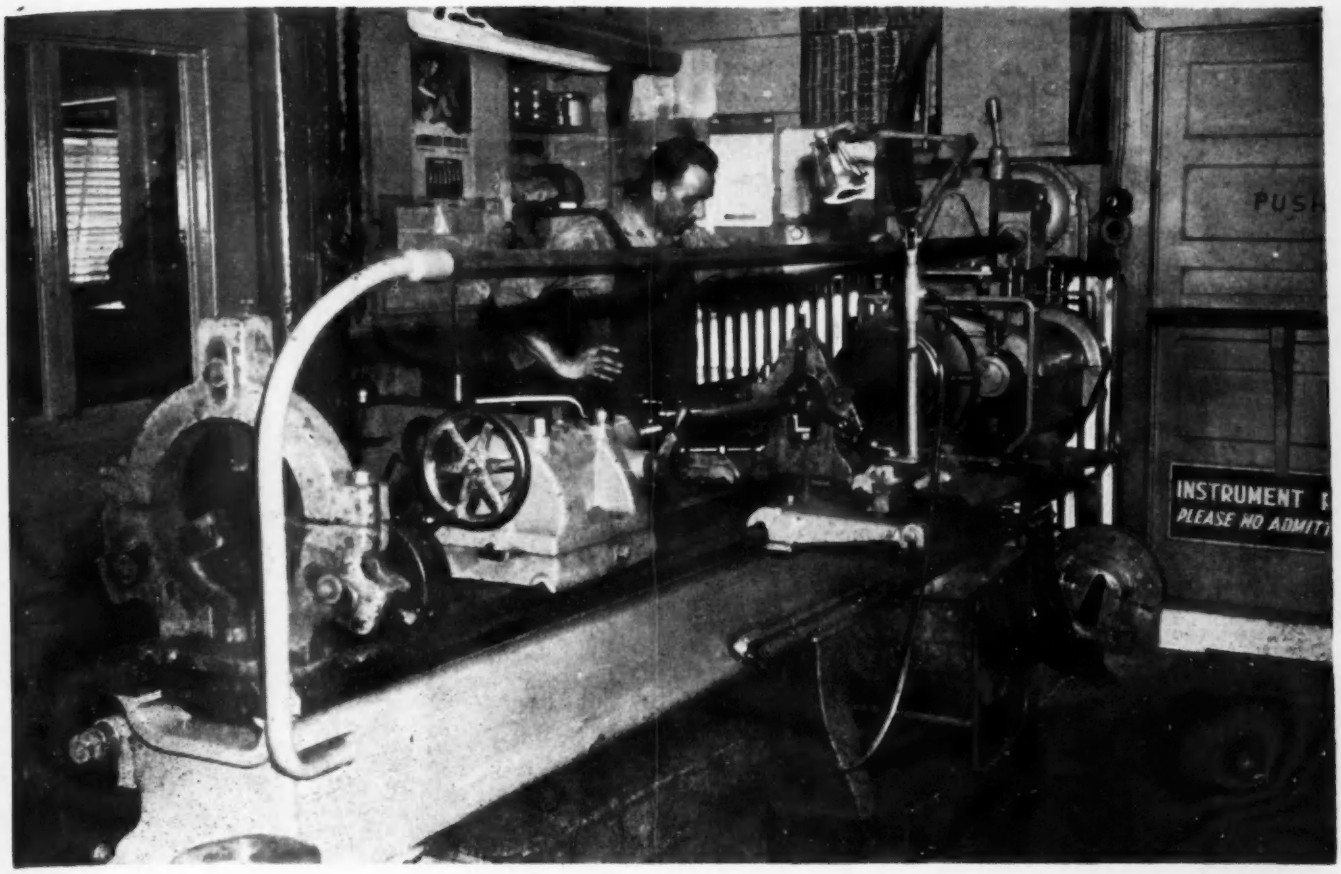
Cancellation at time of induction of any indebtedness due the company for petroleum products purchased.

And at Christmas, 1944, each employe in military service received from the company a Series "E" war savings bond of a face value at maturity of $50, and a Christmas parcel.

A plan has been submitted to the board of directors which amends the Military Service Policy and Retirement Allowance Plan. It provides that each employe who enters service during

■ CONTINUED ON PAGE

Long Pole Switch Simplifies Lathe Control



THE nature of work in the average oil company pipe valve repair shop is such that seldom are two consecutive jobs sufficiently alike to permit the mechanic using the same lathe set-up. One job may be a short fitting, chucked up close to the face plate and the next job may be one requiring the chasing down of threads on the far end of a 6-foot section of pipe. To reduce the amount of foot work connected with such work, one machinist worked over the shop lathe, installing on it a full bed-length switch control which is easily accessible to the mechanic from wherever he may be operating his cutting tool.

A long octagonal wooden pole was finished up smoothly, with several inches of one end being turned down to cylindrical shape so it could be fitted into the end of a short elevated pipe socket mounted on the right end of the lathe bed. The other end of the pole is fitted into the end of a rotary switch box salvaged from another piece of power equipment and mounted on the motor drive rack above the lathe drive pulleys. The pole, mounted at convenient hand height and within easy reach, provides instant control from all parts of the machine, a simple twist of the wrist giving ample control over the lathe.

Veteran Reemployment

■ CONTINUED FROM PAGE 66

World War II and re-enters the corporation's employ within the time provided in the plan as amended, shall be entitled to a credit equal to double the period of the employe's military leave of absence from the corporation in the determination of his or her eligibility for retirement on the basis of continuous service; and a credit on the personnel records of the corporation for every month of such leave of absence (but solely for the purpose of computing any retirement allowance for which the employe may later be eligible) equal to double the monthly base salary or wage such employe was receiving from the corporation during the calendar month prior to the date of entry into military service.

The Texas Company: The company intends to go far beyond its legal obligation in placing men and women who return to the company from military service. Many such employes will return with new skills and greater educational accomplishments, and will have developed ability to assume larger responsibility and to exercise supervision. It will be the company's endeavor to offer the opportunity to use that education and skill to the fullest.

Moreover, in placing physically handicapped war veterans, the company's policy will be to endeavor in all possible ways to find positions in which they can work and feel a sense of worthwhile accomplishment.

To help department heads in this work, the company has set up an Employe Counsellor Plan to acquaint the returning employe with the opportunities for educational and vocational training available to him through federal and other agencies, and to assist him generally in making a smooth and constructive transition from military to civilian life.

Drop Shown in Report of Kansas Oil Production

The Kansas Corporation Commission in its May oil production order reported a total of 23,401 wells in that state with combined productivity of 4,205,787 barrels. This is a decline of 1,104,825 barrels of productivity as compared with wells and productivity figures a year ago when there were 23,083 wells and 5,310,612 barrels. Kansas has a total of 6437 oil wells in the prorated areas producing 4,123,513 barrels and 16,964 unprorated oil wells producing 82,274 barrels daily.

The report lists four new oil fields: Forest Hill, Shawnee pool in Russell County; Marjorie Viola where the first oil production was opened in an area which so far has produced gas only; Ray West Arbuckle pool and a discovery in Ellis County which has not been named. The Big Creek East Arbuckle and Kansas City pools were combined with the Big Creek pool.

AGA Personnel Meet

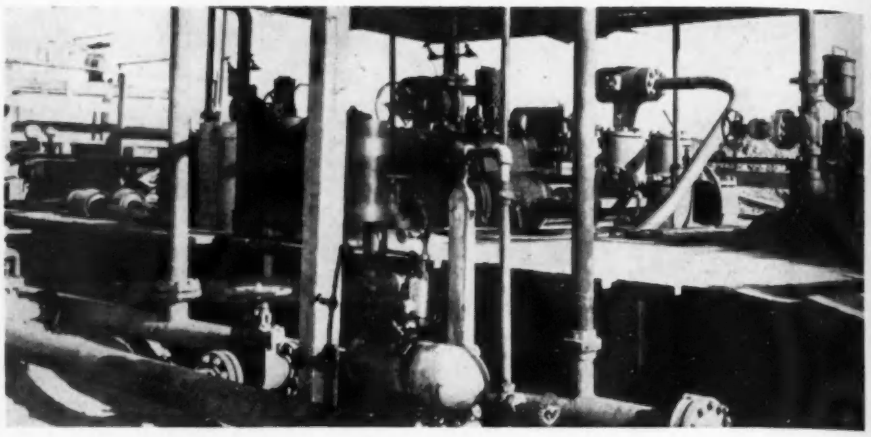
The ninth meeting of the American Gas Association Southwest Personnel Conference will be held in the Washington-Youree Hotel, Shreveport, Louisiana, June 5. M. V. Cousins, personnel director of United Gas Pipe Line Company, is chairman of the conference.

DRILLING HINTS

Elevated Flooring Around Mud Pumps Brings Units at Convenient Working Height

On deep well installations where equipment is likely to be set up for a matter of perhaps several months, one company found it advantageous to provide a raised wooden flooring around the mud pumps. Elevated some two to three feet above the general ground level, the flooring permits easier servicing by the pump man, allowing him to reach over the top of the tall units to manipulate valves and otherwise maintain the pumps. Overhead is a galvanized roof made up of unitized sections bolted together, with the whole supported by several pipe standards. Steam lines coming in from the main line are brought in overhead, high enough to allow a man to walk beneath them, flange connections making easy removal of the lines into single units when moving to another location. Operations such as pulling pistons and liners are simplified due to elimination of the problem of having

MUD PUMP SETTING



to keep such parts out of dust or mud usually existing around the pumps.

Inexpensive to install and maintain, the plain wooden floor is built of rough lumber laid upon stringers, the latter in turn supported by short sills. With all sections cut to proper length and unitized wherever possible, assembly and disassembly of the raised flooring is a rapid operation.

$5.00 is paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, P. O. Box 2608, Houston 1, Texas

PENBERTHY

"REFLEX"

WATER GAGE SET

For oil field, locomotive type and marine boilers. Water shows black — steam shows white; the water level is unmistakable. U-Bolt construction is strongest and simplest to service. Glass replaced by simply removing nuts on face of gage . . . unnecessary to work between gage and boiler. Conforms with A.S.M.E., Federal and State requirements when used for pressures specified by their respective codes.

This is one of the complete line of Penberthy gages that meet every liquid level gage requirement.

PENBERTHY INJECTOR CO.

DETROIT, MICH. Canadian Plant WINDSOR, ONTARIO

Measuring Line Reel Mount Permits V-Belt Drive

An ingenious and highly effective method for mounting the measuring line reel and providing any desired tension in the drive belt has been worked out by one drilling contractor which permits of V-belt drive through a grooved flange welded as extension to the cathead flange. The belt is placed by slipping over the cathead, and then looped over the drive of the reel unit. By using the large drive pulley, it is possible to get high reel speed without racing the drawworks shaft.

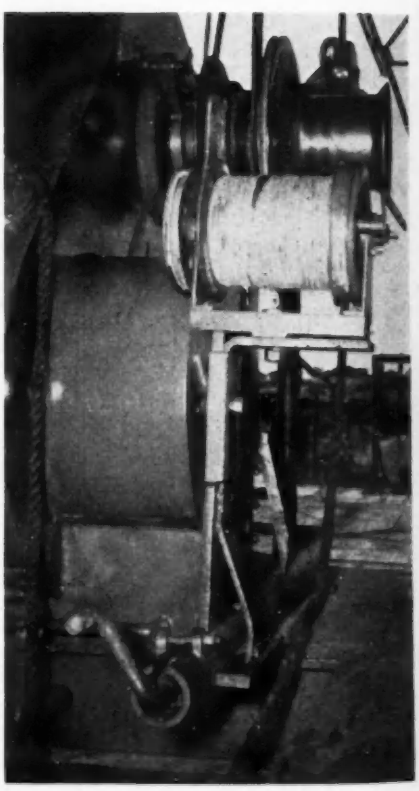
MEASURING REEL STAND

The reel is carried on a heavy post which is equipped with a foot or shoe which slides within a short section of heavy drill pipe, slotted on top to admit the post. An auxiliary brace or side support is welded to the post, and slides in a slot positioned in a bar welded alongside the pipe.

The foot member is drilled and tapped, with a heavy rod, carrying the same thread, being run through the foot and anchored so that turning the rod advances or retracts the supporting member in relation to the cathead. To facilitate the adjustment, the end of the rod is formed into a crank with arm giving sufficient leverage to exert the desired tension in the belt.

A tie bolt, across the slot in the base pipe member, serves to close the pipe around the shoe and prevent vibration, also acting as stop to keep the support within the pipe.

Pads welded to the horizontal pipe permit of bolting the unit to the drawworks beams, and insure rigid mounting. Since the reel is located behind the cathead, and does not cut down on usual working clearances, it may remain on the post throughout drilling operations.



DRILLING HINTS

Gasoline Stove Speeds Drying of Cuttings Samples

SAMPLE DRIER

When cuttings are to be examined at once, they can be dried quickly by using a 6-inch frying pan and a portable gasoline pressure-type stove. The stove is small enough so that it can be carried easily to any part of the well area necessary for working, and with a half dozen or so small frying pans, several batches of samples can be dried in a short time. The outfit can be stored safely in the drilling well dog-house by nesting the pans on a convenient nail, while the stove can be slid beneath a bench where it will not be underfoot.

Counterweight Aids in Reversing Steam Engine Gear

DRILLING ENGINES

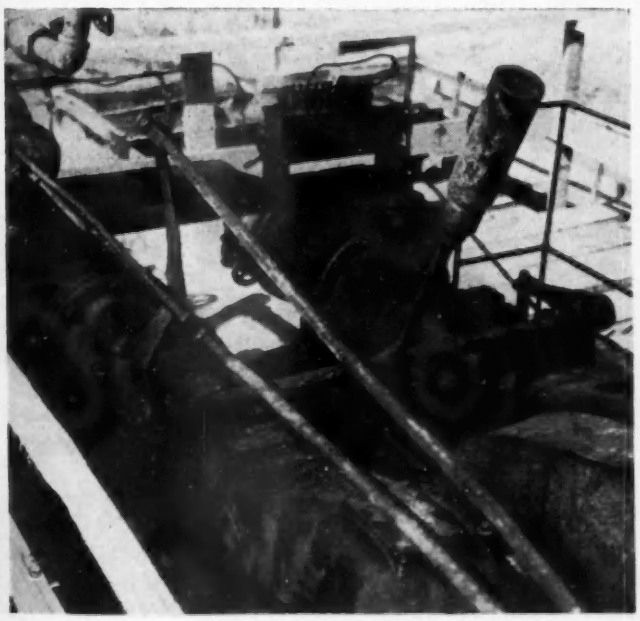
On a steam rig, the act of throwing the drilling engine into reverse or from reverse back to ahead requires a substantial effort on the part of the driller, for there is an appreciable weight and "drag" of the control mechanism and reversing linkage. To relieve part of this effort and at the same time obtain faster, snappier action in the linkage, one driller welded to the cross-arm linkage an upright steel arm, to which is attached a drill pipe sub or other similar weight.

The weight stands two or more feet above the cross-arm and is mounted at a critical angle from the vertical. When the weight crosses dead center it will fall on over of its own accord, bringing the lever over to the stopping point with a pronounced and snappy action and with but little further work by the driller at the controls.

While it takes a slight extra "heave" to start the movement, the ease with which the linkage is shifted from that point on to the limit of its travel spells an appreciable saving in labor, particularly when running in or coming out of the hole with a long string of pipe.

The weight of the valve linkage varies with different engines and the length of the lever as well as the weight of the control rod, so that it is advisable to experiment to determine the most advantageous setting of the counterweight before welding it in position. If the support be split and the halves bent out at right angles to the lever arm, a pair of cable clamps may be used to hold the unit in place, yet permit experimental adjustment without requiring use of the torch until the unit is to be permanently welded into place.

By using a drill pipe sub or other weighting unit which is hollow, it is easy to provide counterweight "riders" which may be slipped into the sub for those drillers who are willing to wrestle with a little more counterweight at the start of the reversing action, so as to have more assistance once the motion is begun.



Suspending the weight in the center of the reverse rod also tends to equalize torque in the rod, and to move both valve gears simultaneously.

If the sub be provided with a threaded bushing, it may be unscrewed from the rod when the engine is to be moved, leaving the top of the unit clear for storing other equipment and consequent saving of space. Some drillers, however, unshackle the reversing lever so that it may be laid over forward so as to lie flat on the chain drive cover.

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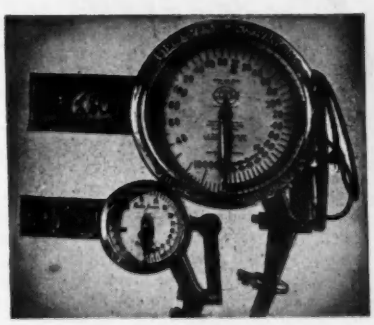

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DRILLING HINTS

Hinged Shields Prevent Crown Block Accidents

DERRICK SAFETY

As a means of protecting workmen who have occasion to work on the crown block assembly, one oil company has adopted the practice of mounting on the two open sides of the crown a sloping section of light steel plate which prevents anyone from accidentally falling through the opening or perhaps getting an arm or leg caught in the moving sheaves or lines. The plates are bolted to two small steel brackets which in turn are bolted to the side of the crown block bearing base member. The rectangular sheets are mounted while the crown block assembly is still on the ground or is in the shops undergoing repair and overhaul.

Most important function of this shield is the safety it affords to the derrickman when he is aloft for lubricating, adjusting or otherwise checking the crown sheaves and lines. Since the rig seldom is shut down for such routine

operations, there has always existed a danger to this workman until the practice of providing the safety shields was initiated.

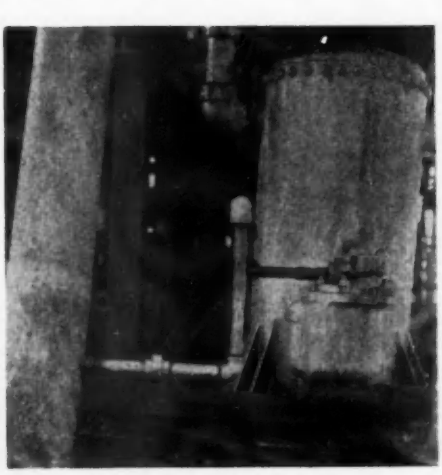
Steam Trap Drain Delivers Condensation to Exhaust

FOUNDATION PROTECTION

Drainage from the steam trap on the separator just ahead of the drilling engine, if allowed to flow out onto the ground, eventually will soften the soil and make an unsightly and hazardous puddle close to the derrick. One contractor gets rid of this condensation by connecting the trap waste line to the exhaust steam line

The 1-inch trap line is provided with a double swing, set on a riser so as to permit expansion and vibration shifts to be absorbed between pipe and trap, and with the outlet tapped into the side of the downcomer of the exhaust line. Water discharged by the trap is picked up by the exhaust steam and carried with it to the end of the line, there being released with low-pressure steam and other condensation, at a point where it cannot affect the derrick working area.

Unions, set close to the trap and exhaust line, permit the swing to be removed for transfer to a new location, or the outer (exhaust pipe) union may be disconnected and the other simply loosened, allowing the swing section to fold back alongside the separator, where it is secured by tightening the union again or tying with a bit of rope yarn.



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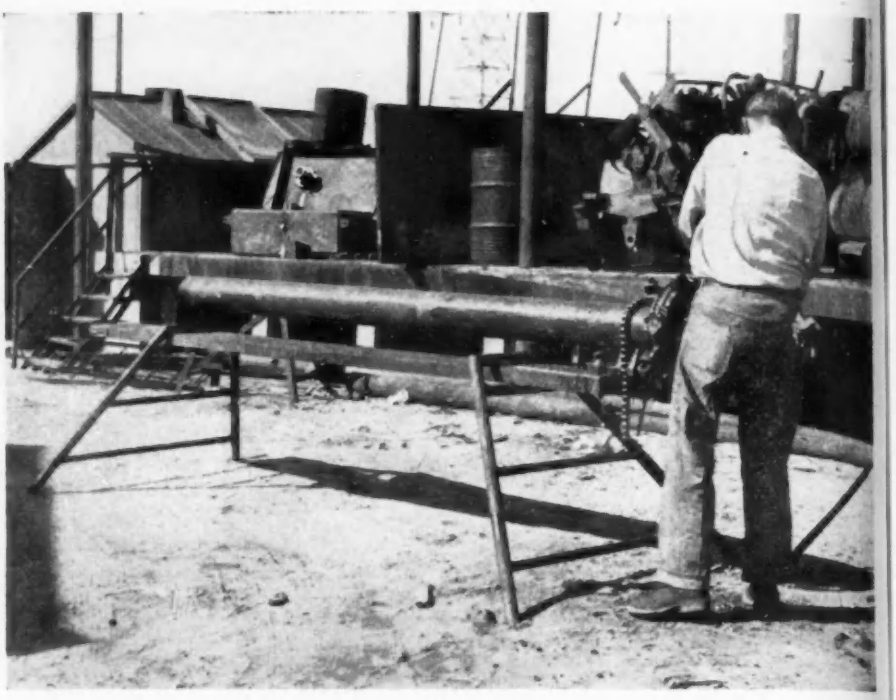
One spacer is provided at the top and three inches below this and parallel to the top spacer is another pipe. Two more pipes are welded across the legs at even spaces from the top. When in use a heavy plank such as a 2x12 is placed between the two uppermost cross pipes. The legs are then spread outward until the plank is bound between the two pipes. The more weight or force applied to the plank, the tighter it is wedged in the A-frames and the more rigid becomes the bench. In loose soil the legs may be tightened by tapping on the inner side with pipe wrench or bar before placing pipe or material on working surface.



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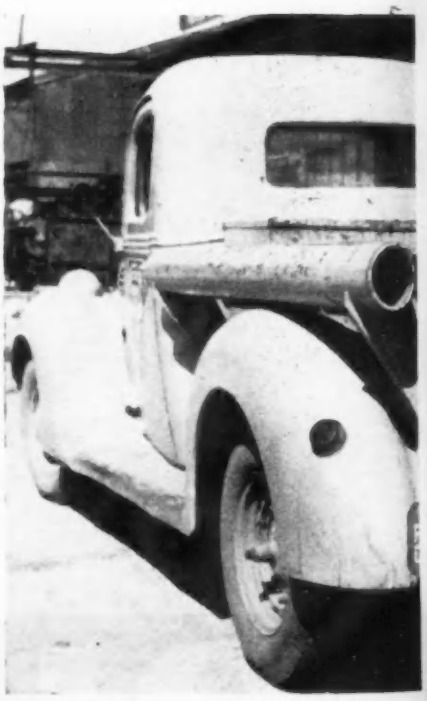
Fender-Mounted Tube Carries and Protects Instruments

HANDLING INSTRUMENTS

Certain instruments such as surveyor's transit, levels, rods, etc., must at times be carried over rough oil-field roads. In the light pick-up or other oilfield truck no safe place for these instruments is provided by the truck manufacturer. The other tools usually carried would provide a hazard should the instruments be carried in the usual body space.

A simple and yet safe carrying rack has been made by one operator from a short length of light-weight casing. A 6-foot length was found to be about right for all the types of instruments to be carried. The pipe was welded to the sideboard above one fender, well out of the way and well out of danger of other objects coming in contact with the instruments.

The forward end of the pipe was closed and on the other end a special rubber protector was constructed. The protector was made by welding a thread protector to the end of the casing. A heavy rubber gasket was cut to fit over the end of the "flared in" part of the protector. Thus the instruments are protected from coming in contact with the steel of the casing or the truck.



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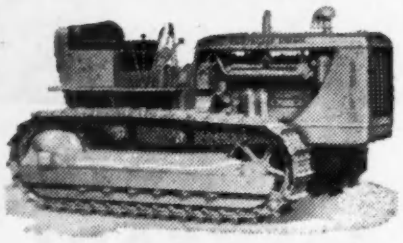

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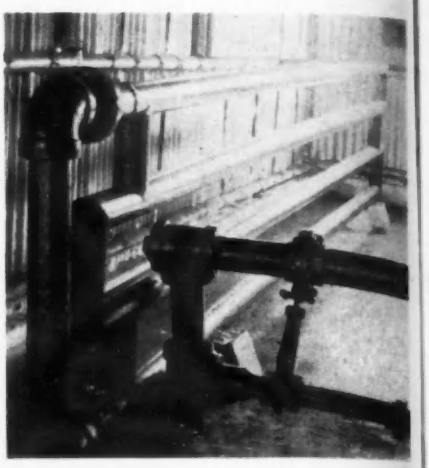
Wall-Mounted Pipe Coil Utilizes Waste Exhaust Heat

STATION HEATING

Heat for the engine room of a gasoline plant obtained from the engine exhaust manifold and cooling water system is augmented in one plant by placing a set of coils along one wall and piping a part of the compressed gases through the coil instead of through the usual heat exchanger outside the building.

The coils are mounted on a rigid base at one end, with the other supported in a saddle which permits expansion shift, while the superimposed coils are each carried in pipe saddles welded to the lower but merely cupped around the upper level pipe.

Use of high-pressure gases for heating exposes the plant to a certain amount of additional fire or explosion risk, and such an expedient calls for rigid inspection of the initial installation and close supervision of the unit to guard against leaks—even the smallest of which would quickly charge the engine room with an inflammable mixture.



Swivelled Towing Bar Simplifies Equipment Transfer

EQUIPMENT HANDLING

Worthwhile savings in man-hours, together with gasoline and general wear and tear of equipment, are being realized daily by the field welding department of one company following adoption of a method of towing welding units to and from distant jobs. Units are equipped with a special towing bar mounted on a bracket on the side of the vehicle and when two welding units are proceeding to the same general area for the day's work, one of them is towed.

Working from a central field office, the various units leave each morning for the several jobs, some of them in fields as far as 20 miles away. Some of the welding personnel, based at the smaller field offices, work out of these local bases and upon arrival of the units, go to work with the towed unit. Formerly it was necessary to have to arrange some other means of getting the second unit out to the field.

Vehicles are equipped with a special mounting on the side of the body panel, out of the way of tools and other welding equipment. The bar is curved so as to permit its adaptation to the high hitch on the towing truck and the low axle assembly on the towed unit. Special quick-attaching fittings permit the bar to be hooked up in a minimum of time, and prevent loss on rough roads.

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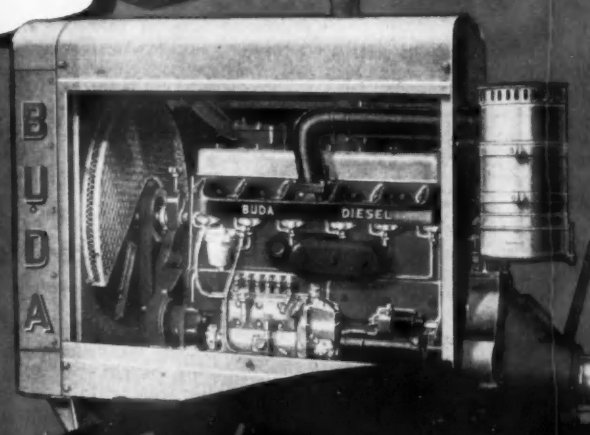

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Creole to Resume Development in El Roble Field After Two-Year Lapse

As a result of thorough studies of reservoir conditions in the El Roble field, northern Anzoategui, Venezuela, Creole Petroleum Corporation will soon resume development drilling there, after a lapse of almost two years.

In spite of the variety of oilfield types in Venezuela, El Roble is unique because of its high gravity oil (51-gravity average) produced at high gas-oil ratios from a series of non-condensate pays. All of the pays apparently exhibit the same characteristics, with no gas-oil separation. This rules out any possibility of shut-off completions to improve gas-oil ratios.

Studies of reservoir characteristics at El Roble, recently completed by private consulting engineers, have confirmed the previous findings and recommendations of Creole's engineers and geologists, indicating that future development of the field will follow completion techniques previously employed there. This will require that oil produced from El Roble wells must necessarily involve the venting of great amounts of gas.

At present there are ten producing wells in the field. They are being operated at their maximum efficient producing rates, yielding a combined daily average output of approximately 6000 barrels. At the beginning of 1943 the average gas-oil ratio of El Roble wells was 3425-1; while a year later the ratio had risen to 4850-1; and by January 1, 1945, to 6000-1. The change in ratio has been regular and predictable.

The field is only partially developed so far. Step-out extension drilling, due to be resumed this year, will be watched with interest, therefore, not only from the standpoint of establishment of ultimate producing area of the field, but because of the possibility of changing conditions in the reservoir sands. Of special interest will be any completions made to the south of the current producing area, in the direction of the San Joaquin field, which is less than four kilometers distant.

El Roble is operated entirely by the Creole company, although the developed producing area is within one of the Pantepec concessions. While the latter company enjoys a joint interest in the field's output, the production split is subject to deductions for drilling, production and other operating costs, since all expenses are borne by Creole.

Venezuela Accounts for Third of Gulf's Output

Of the 119,327,231 barrels of crude oil (gross) produced by Gulf Oil Corporation and subsidiaries in 1944, more than 39 million barrels were withdrawn from wells in Venezuela belonging to Mene Grande Oil Corporation. This represented an increase of approximately 18,000,000 barrels over Mene's 1943 output.

Inasmuch as Gulf's combined domestic and foreign production for 1944 was 33,530,000 barrels greater than in 1943, the increase from Venezuela operations accounted for considerably more than half of the gain. This record is of particular interest since of the 795 wells drilled by Gulf during the year only 19 percent were put down in Venezuela.

A comparison of drilling results shows that Mene Grande went through the year with a record of 99.3 percent successful completions, contrasted with Gulf's domestic dry hole ratio of 19.6 percent for the year.

Barco Concession Given Two Producers in April

Two successful completions at Socuavo during April have been reported by Colombian Petroleum Company, bringing to 17 the number of producing wells to date in the Tibu area of the Barco Concession. Several of these are shut in.

At the end of April Socuavo 17 was less than 400 feet short of expected completion depth, and Socuavo 18 had been spudded. To the south, at Tres Bocas, where development has been held back, drilling was about ready to be resumed at Tres Bocas 4 exploratory well, that may be taken through the Cretaceous to basement rocks. Drilling was halted at this well during most of April with tools lost in the hole at 3150 feet. At last reports sidetracking was in progress, after which the hole was to be reamed.

Curbs Remain on Oil Firms' Activities in Germany

American oil companies will not be permitted to operate freely in Germany for many months, at the least, perhaps years, at the most.

Plans of the War Department for the administration of that part of the country which will come under the American military government call for complete control of all German industry and foreign trade by an Economic Division, one of 12 sections set up under Gen. Dwight D. Eisenhower, commander-in-chief of the United States occupation forces and American representative on the control council which will set over-all policies. Also on the council will be representatives of England, Russia and France.

Actual supervision of the American zone will come under Lt. Gen. Lucius Clay, Eisenhower's deputy, tough-minded 48-year-old West Pointer who formerly was director of materiel for the Army Service Forces and later War Mobilization deputy director for war programs.

The general plan for administration of Germany calls for complete control of every phase of German life by the military government. In the American sector, the Economic Division will deal with all problems of fuel and mining, including oil production, price control and rationing, utilities, internal and foreign trade, industry reconversion and liquidation. The Finance Division will control public finances, foreign exchange and currency, and the Transport Division will have charge of all forms of transportation.

The same setup will operate in the areas occupied by the other three powers, and no provision is made for American business to get into the country at this time.

Tropical Well Attempts Casabe Field Extension

Tropical Oil Company, operator of the De Mares concession, from which three fourths of the petroleum production of Colombia is derived, is preparing to start a wildcat well on the east bank of the Magdalena River, opposite the Casabe field which Shell has now proved up to the west bank of the river.

The extension test, Galan 1, was to be spudded before the middle of May. The location is on the right-of-way of the Andian pipe line. It is not believed that either Shell or Tropical interests will be allowed to make locations in the river bed, since the Colombian government has ruled against all requests in the past for permission to test or develop acreage along navigable stream beds.

FPC Bans Piping of Gas Into Mexico from U. S.

In a three-to-two decision, the Federal Power Commission has refused to authorize the piping of natural gas into Mexico from the United States. In its decision, the FPC held such action would be inconsistent with the public interest.

The commission dismissed the application of the Reynosa Pipe Line Company, a Texas corporation, seeking to transport 60,000,000 cubic feet of natural gas daily. The gas was to be produced by the La Gloria Corporation and transported to Reynosa and then to Monterrey. Gas Industrial de Monterrey was to purchase the gas.

Oil Imports to Be Needed After War, Is Prediction

While independent producers are holding the line against foreign oil imports after the war, the prediction that such imports will be necessary for this country's economy in the postwar era was made by E. P. Hindes, chief geologist, and R. V. Whetsel, head of the foreign department of Cities Service Company.

In an article entitled "Tomorrow's Oil" the writers point out that European markets will be supplied from Middle East fields and that the Eastern Hemisphere has ample oil to meet all of its needs and that South American production must find its outlet in this country.

Record Crude Production and Refinery Runs Do Not Stop Drawing on Storage

Although crude production and refinery runs climbed to new all-time highs in the week ended May 12, there was no excess of output of either the raw material or finished products. In the face of larger production of the major products than in the previous week there was a normal seasonal withdrawal of gasoline from storage and residual fuel oil continued to come from storage, which decreased to a new low since the early 1920's, while accumulation of distillate fuel oil in storage was less than normal for the season. Since refinery runs practically equalled domestic production, a continued draft on crude storage was indicated.

U. S. production of crude averaged 4,860,000 barrels daily in the week ended May 12, an increase of 21,000 barrels over the preceding week and 358,000 a day or 8 percent more than output in the corresponding week last year, which was 4,502,000 barrels daily. Crude runs to stills averaged 4,850,000 barrels per day, up 64,000 from the week before and 419,000 a day or 9.5 percent more than the runs of 4,431,000 daily in the comparable week a year ago. Crude stocks of the nation declined 2,455,000 barrels in the week ended May 5, an average of 351,000 barrels daily, having declined to 221,019,000 barrels. That quantity was 13,000,000 barrels or 5.6 percent less than the 234,166,000 barrels held May 6 last year.

Gasoline production amounted to 15,137,000 barrels in the seven days ended May 12, an increase of 291,000 barrels over the amount produced in the preceding week and 1,737,000 barrels or 13 percent more than the output of 13,400,000 barrels in the like week last year. Stocks of finished and unfinished gasoline were seasonally reduced 1,391,000 barrels within the week, having declined from 91,341,000 to 89,950,000 barrels. They then were 2,276,000 barrels or 2.6 percent above the 87,674,000 barrels reported as of May 13 last year. Of the week's draft on stocks more than half represented reduction of military supplies. Stocks of civilian grade gasoline were reduced 555,000 barrels, having declined from 49,721,000 to 49,166,000 barrels. The new total was about a million barrels less than the 50,148,000 barrels of civilian grade held at the same time last year. Stocks of military and other grades were reduced 836,000 barrels during the week, having declined from 41,620,000 to 40,784,000 barrels. The latter amount was about 3 million barrels more than the 37,526,000 barrels held a year previously.

Gasoil and distillate fuel oil production of 4,749,000 barrels in the week of May 12 was 54,000 barrels more than in the previous week and 35,000 more than output in the corresponding week a year ago. Stocks were increased by 196,000 barrels, having risen to 28,996,000 barrels, but that amount was nearly 2,000,000 barrels or 6 percent less than the 30,755,000 barrels reported for May 13 last year.

Residual fuel oil production of 9,610,000 barrels in the May 12 week was 332,000 barrels more than in the previous week and 1,174,000 barrels or 14 percent more than the 8,436,000 barrels produced in the like week last year. Stocks of residual were reduced by 555,000 barrels during the week, having been cut to 38,948,000 barrels, the smallest volume in storage since shortly after World War I. The current inventory is about 11,500,000 barrels or 23 percent less than the 50,505,000 barrels on hand a year ago.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod. Barrels Daily	Crude Oil Prod. Week Ended	Runs to Stills Barrels Daily	Runs to Stills Week Ended	Crude Stocks Barrels	Crude Stocks Week Ended	Gasoline Stocks Barrels	Gasoline Stocks Week Ended	Gasoil and Distillate Stocks Barrels	Gasoil and Distillate Stocks Week Ended	Residual Fuel Oil Stocks Barrels	Residual Fuel Oil Stocks Week Ended
Highs:												
1941	4,337	11-22	4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	47,861	11-14	95,857	1- 3
1943	4,436	11-13	4,331	12- 4	245,752	5-29	94,159	3-20	47,187	11-27	72,881	1- 2
1944	4,762	9-30	4,798	12-30	240,992	1- 1	89,162	4- 1	48,863	10-28	64,744	10- 7
1945	4,860	5-12	4,850	5-12	223,782	4- 7	99,012	3-24	38,298	1- 6	56,074	1- 6
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 8
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,382	4-12	90,914	7-12
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-13	232,191	1- 9	68,182	10-16	30,732	4- 3	57,596	12-25
1944	4,357	1- 1	4,228	2-12	220,258	9- 9	76,302	1- 1	30,232	4-19	49,737	3-18
1945	4,678	1- 6	4,656	1- 6	[4]218,675	3- 3	86,616	1- 6	26,483	3-17	38,948	5-12

TRENDS OF 1944 AND 1945

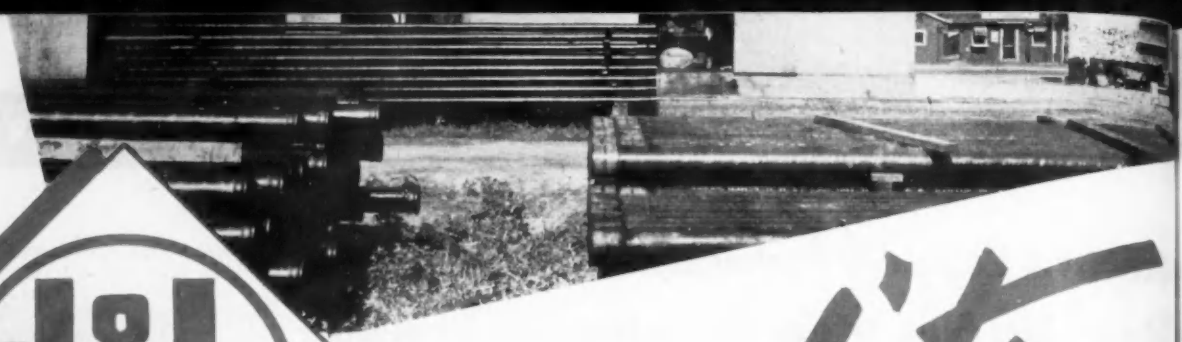
Trends in Week Ended:	Crude Oil Production Daily	Crude Oil Runs to Stills Daily	Crude Oil Stocks Week End	Gasoline Production Weekly	Gasoline Stocks Week End	Gasoil and Distillate Production Weekly	Gasoil and Distillate Stocks Week End	Residual Fuel Production Weekly	Residual Fuel Stocks Week End
1944:									
January 1	4,357	4,453	240,992	13,192	76,302	4,575	42,310	9,141	57,330
January 29	4,409	4,359	240,251	13,427	81,075	4,054	37,266	8,889	52,857
February 26	4,423	4,377	237,137	13,183	85,248	4,558	33,766	8,952	51,387
March 25	4,385	4,443	236,285	13,362	87,287	4,979	31,319	9,013	51,669
April 1	4,383	4,435	234,667	13,824	89,162	4,450	30,530	8,367	51,326
April 29	4,431	4,300	235,342	13,126	88,342	4,284	30,236	8,398	49,985
May 27	4,514	4,532	234,423	13,502	86,468	4,702	32,035	8,568	49,812
July 1	4,587	4,638	228,860	14,052	83,559	4,496	35,360	8,872	52,235
July 29	4,608	4,627	225,112	14,115	82,665	4,833	38,135	8,900	56,280
August 26	4,667	4,698	222,931	14,112	80,740	4,566	41,453	8,680	59,839
September 30	4,762	4,775	222,393	14,494	78,028	4,622	45,329	9,292	64,226
October 28	4,740	4,658	223,235	14,117	79,058	4,772	48,705	8,985	64,382
December 2	4,712	4,693	221,591	14,853	80,427	4,082	45,832	8,981	61,727
December 9	4,704	4,552	220,258	14,611	80,880	4,056	44,436	8,923	60,458
December 16	4,695	4,537	222,075	14,145	82,747	4,353	42,413	8,727	59,280
December 23	4,729	4,682	222,575	14,635	83,355	4,605	40,846	8,798	58,509
December 30	4,705	4,798	222,998	15,342	86,614	4,257	39,495	9,156	57,430
1945:									
January 27	4,727	4,756	221,310	14,957	88,223	4,843	33,651	9,252	51,119
February 24	4,777	[1]4,803	219,351	15,500	95,972	4,958	28,753	9,084	46,713
March 31	4,781	4,677	223,782	14,644	98,758	4,548	26,889	9,184	41,745
April 28	4,805	4,780	223,474	14,633	94,068	4,636	28,273	9,379	39,813
May 5	4,839	4,786	221,019	14,846	91,341	4,695	28,800	9,278	39,503
May 12, 1945	[1]4,860	[1]4,850	.....	15,137	89,950	4,749	28,996	9,610	38,948
May 13, 1944	4,502	4,431	[5]234,166	13,400	87,674	4,714	30,755	8,436	50,505
Change:									
In week	+21	+64	—2,455	+291	—1,391	+54	+196	+332	—555
In week	+358	+419	—13,147	+1,737	+2,276	+35	—1,759	+1,174	—11,557
In year	+8.0%	+9.5%	—5.6%	+13.0%	+2.6%	+0.7%	—5.7%	+14.0%	—22.9%

[1] All time peak. [2] Lowest between January, 1922 and July 1, 1944. [3] Lowest since October, 1922 due to shutdown of six Mid-Continent states. [4] Lowest since December, 1921. [5] Stocks, May 6, 1944.

The Ohio Oil Company Lists Personnel Changes

C. J. Hares, division geologist of the Casper division of The Ohio Oil Company was placed in charge of geologic research for foreign fields and foreign prospective oil and gas provinces effective April 1. He has been succeeded at Casper by R. W. McCanne, a company geologist since 1934.

F. R. Clark, division geologist of the Tulsa division, has been assigned to handle special problems involving geology and related matters at Tulsa and was succeeded May 4 by R. A. Koenig, formerly division geologist and acting manager of the Findlay division. R. L. Fillner, division landman, Findlay division, has been named acting superintendent and division landman at Findlay and will assume all supervisory responsibilities formerly carried by Koenig.



J&L PIPE quality

shows up at the well

J&L pipe in the yard presents a prosaic picture.

But many of the most exciting wells in the history of oil and gas are being drilled and produced with J&L tubular goods.

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Bell and Spigot Casing
Line Pipe—Standard Pipe
Seamless Steel Boiler Tubes
Cement-Lined Pipe

JONES & LAUGHLIN SUPPLY COMPANY

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J&L STEEL

TULSA, OKLAHOMA

Artesia Company to Build Line from Red Lake Field

Artesia Pipe Line Company has authorized the construction of a 5-mile combination 2 and 3-inch crude line from the Red Lake field, Eddy County sector of New Mexico, to Midway Station on the New Mexico Pipe Line Company's trunk line.

The purchase oil will be delivered by the latter to the New Mexico Asphalt & Refining Company's refinery at Artesia.

Contract for Construction Of 38-Mile Line Awarded

The Houston Natural Gas Corporation has awarded a contract to J. W. France Company, Inc., Corpus Christi, to construct a 38-mile natural gas line from Corpus Christi to fields east of Alice, Jim Wells County, Texas.

The line will consist of 8-inch and 12¾-inch pipe and will cost approximately $750,000. Pipe has been delivered to Corpus Christi and construction will get underway immediately.

This new line will serve both industrial and residential outlets.

Panhandle Eastern Awards Contract for 32-Mile Line

Midwestern Engineers, Tulsa, Oklahoma, have been awarded a contract by Panhandle Eastern Pipe Line Company to lay 32 miles of new, 24-inch natural gas loop line near Edgerton, Indiana, and Maumee, Ohio, designed to increase Panhandle's capacity to the Detroit area.

Gas is being run from the Hugoton field. Laying will begin in June and the project is expected to be completed in September.

Stanolind Grants Contract For 24 Miles of Utah Line

Anderson Brothers Construction Company, Houston, was awarded a contract by Stanolind Pipe Line Company, Tulsa, to lay 24 miles of 8-inch crude oil line for Utah Oil Refining Company from Uinta Junction near Ogden, Utah, south to Salt Lake City. Work will get under way immediately.

This line is part of a 152-mile project announced recently by the Utah Oil Refining Company which will serve as an outlet for the Rangely pool, Rio Blanco County, Colorado. Additional construction awards will be made May 27.

Texas-New Mexico Installs Tanks for 12-Inch Carrier

Texas-New Mexico Pipe Line Company is installing 2 80,000-barrel capacity steel tanks at Ozona station on its New Mexico-West Texas to Houston 12-inch carrier, and has applied for priorities on additional tankage to facilitate the segregation of Permian Basin crudes.

Ozona station is the receiving point on runs of sweet and high-gravity crudes from the Todd deep field, Crockett County. The company is credited with handling 12 grades, which are commingled to the extent that 5 types of crude are delivered into the Houston terminal.

Humble Awards Contract

C. W. Sternberg of Houston has been awarded contract by Humble Pipe Line Company to recondition 24 miles of 8 and 10-inch line between Rankin and Big Lake in West Texas.

Stanolind Extends Line From Heard Pump Station

Stanolind Pipe Line Company has entered the Hildreth field, Montague County sector of North Texas, with a 2-mile, 4-inch extension from its Heard pump station near the Stoneburg pool. The initial field gathering system involves 3000 feet of 4-inch and 5800 feet of 3-inch, although the latter will be materially expanded as the field advances northwest.

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SIMPLICITY IS THE FIRST REQUISITE OF SAFETY

Simplicity assures a customer that the smallest number of the highest quality parts will be left in his completed structure

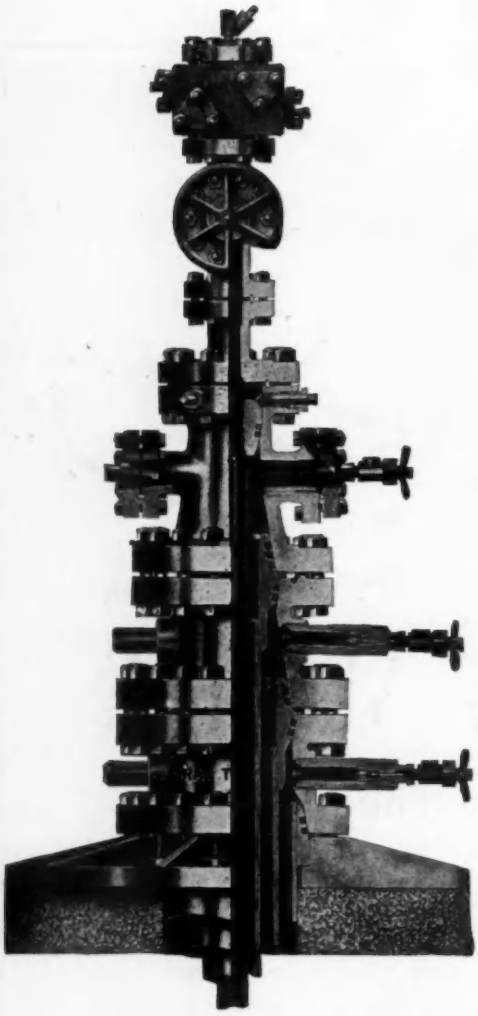


FIGURE 1A

Complete Well Head Assembly equipped with Composite Manifold, Valve Removal, Installation and Removal.

The increased cost of higher quality is offset many times through the savings in parts that have been eliminated, and in many instances do not have to be purchased at all.

In the process of development, many complex structures ensue, but, when the solution is found, its simplicity is so apparent that one quickly forgets that the problem ever existed. Experienced designers have learned, through failures to obtain long-termed trade acceptances, to control their enthusiasm over the merits of new designs until they have found something which measures correctly by the yardstick, SIMPLICITY, for they know that only then have they passed through the stage of development to the point of finding a satisfactory solution.

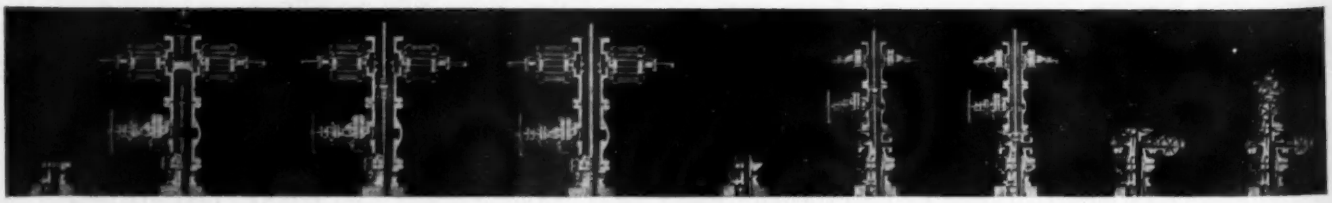
Here are some specific advantages existing in Gray designs. To remove a valve our method of equalization eliminates the loads encountered. In Gray hangers, we reduce the pressure subject areas. In our methods of welding casing to hangers, we eliminate the lever arm. In Gray Composite Manifolds, we concentrate a large number of parts into one. We, further, eliminate the flowing manifold, which reduces the dual outlets to a single flow line extending to the tank. In the nesting of casing strings, we reduce the size of control equipment, together with reduction in the size of casings. Likewise, the pressure subject areas exposed against connections are reduced. We do not leave short-lived temporary packing materials in the permanent structure. We practice the use of one dependable sealing element, rather than depending on several which may or may not hold. We do not use welding flanges, which exert unnecessary lever arms against the weld.

The whole is greater than any of its parts. Increased quality and economy at the same time are only possible where simplification reduces the number of parts that must be purchased.

THE WHOLE IS GREATER THAN ANY OF ITS PARTS

GRAY TOOL COMPANY HOUSTON

West Coast Distributor: WAGNER-MOREHOUSE, INC., Los Angeles. *Export Representative:* GUY E. DANIELS, 30 Rockefeller Plaza, New York City



Casing Head Attached | Drilling | Running Casing | Casing Landed | Drilling Control Equipment Removed | Drilling-in and Running Tubing | Tubing Landed | Control Equipment Removed | Manifold Attached

☆ Oklahoma

Big Magnolia Well Gives West Edmond an Extension

Magnolia gets big well in West Edmond to extend pool nearly 1 mile south; wildcat southeast of Wanette gets 2 million cubic feet of gas on drill stem test; pipe set to test Earlsboro sand in Pottawatomie County wildcat; Bois D'Arc section of Hunton missing in wildcat failure near Okeene to dampen Anadarko Basin production hopes.

West Edmond: In one of the field's best completions Magnolia Petroleum Company extended the Oklahoma County sector of the 4-county West Edmond pool nearly a mile south at Whetstone 1, C NW SE 33-13n-4w. On a 3-hour production test the well flowed 570 barrels of oil and 6 million cubic feet of gas from the Bois D'Arc section of the Hunton through perforations at 6990-7035 feet. Activity in the southern sector featured the field's activities with 3 completions reported.

Pottawatomie County: Nearly 5 miles southeast of Wanette and near several shallower gas wells but several miles from nearest production at the same depth, Cities Service Oil Company's Hoffman 1, SE NE NE 34-6n-3e, showed for 2,780,000 cubic feet of gas from the Wanette gas sand between 3432-53 and 3462-70 feet. The well set 7-inch pipe at 3512 feet and was conducting completion operations.

Garfield County: The second setback in a week for the New Garber pool was reported at The Ohio Oil Company's Hermansky 1, SE C 36-23n-4w, abandoned at 5636 feet, total depth, after tests in the Arbuckle and second Wilcox zones failed to show. The outpost was about ¾ mile west of the pool's discovery well, Mariner 1, drilled by Cities Service Oil Company. The well ran low and seems to indicate a steep plunge of the structure to the west.

Blaine County: On the basis of additional information, The Superior Oil Company of California's failure at Norris 1, NE C 17-19n-10w, northeast of Okeene, appears a serious setback for production prospects in the Anadarko Basin, at least from the Hunton. It was learned that the wildcat, drilled to 11,010 feet, missed the Bois D'Arc section of the Hunton lime, most likely member to produce, which apparently was erroded off.

Shawnee Area: Ashland Oil & Refining Company has a probable pool opener 4½ miles northeast of Shawnee at Lohman 1, NE SW SW 1-10n-4e, Pottawatomie County, where operators recovered 120 feet of oil-cut mud and some free oil from the Earlsboro sand between 4015-20 feet. Previous cores showed good porosity and saturation. The well was carried through the Woodford shale and the first and second Wilcox sands to 4984 feet, then plugged back to the Earlsboro with pipe set at 4003 feet for production test.

Cleveland County: Crews at O. G. Harp's Mattheson 1, NE NW NE 19-10n-2e, 2 miles east of Moore, were swabbing an estimated 10 barrels of oil an hour cutting between 5 and 10 percent water, from the Bartlesville sand which late last year tanked 1325 barrels during a 2-day freak flow. The well has operators stumped to account for its performance although some believe the original heavy flow came from a crevice. The well was drilled to the second Wilcox where it failed to show and was then perforated opposite the Bartlesville between 7570 and 7615 feet.

South of Lexington, Magnolia abandoned Lexington 1-A, wildcat in the NE NE SW 20-6n-1w at 7050 feet. Checkerboard lime was topped at 5460 feet; Woodford at 6705, and Hunton at 6815 feet. A drill-stem test between 6820-30 feet failed to show.

Oklahoma County: Show of oil in a Bartlesville core cut at 6120-32 feet was reported at J. E. Trigg's Morgan 1, wildcat in the C NW NW 5-14n-3w, 8 miles northeast of the West Edmond pool. Total depth is 6742 feet in the Wilcox with pipe set at 6127 feet and operator is waiting on cable tools to drill in.

Douglas Area: About 9 miles due south of the Garber pool, Gulf Oil Corporation has a possible pool opener at Decker 1, SE SW NW 12-20n-4w, and has set production string at 4492 feet to test a good oil show in the Layton sand. Well was carried to 6096 feet and checked low on the Wilcox. A drill-stem test of the Layton horizon recovered 105 feet of gas-cut, oily mud in 30 minutes.

☆ Kansas

Interest Heightened by Several New Discoveries

Kansas operators pep activities with new discoveries; oil strike north of Atherton pool swabs 25 barrels of oil an hour on 3-hour test; wildcat opens new gas area northwest of Pritchard; Forest Hill pool gets new producing horizon; Stanolind stakes wildcat 5 miles east of big Hugoton extension gasser; Elgin sand well revives activities in old Winfield pool.

Russell County: Derby Oil Company's Rogg 1, a wildcat in the SE SE SW 7-13s-14w, ½ mile north of the Atherton pool, was shut in for tankage after

Wells Completed in the United States in Week Ended May 19, 1945

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†In-put	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama	....	....	....	....	....	....	....	....	....	....	....	1	8	8
Arizona	....	....	....	....	....	....	....	....	....	....	....	....	....	3
Arkansas	10	....	....	2	12	....	....	....	3	3	15	4	64	74
California	28	....	....	....	28	....	1	....	9	10	38	53	777	726
Colorado	....	....	....	....	....	....	....	....	....	....	....	....	11	8
Florida	....	....	....	....	....	....	....	....	1	1	1	1	6	....
Georgia	....	....	....	....	....	....	....	....	....	....	....	....	3	1
Illinois	14	....	....	2	16	....	1	....	5	6	22	30	600	599
Indiana	1	....	....	3	4	....	....	....	1	1	5	5	106	110
Iowa	....	....	....	....	....	....	....	....	....	....	....	....	1	2
Kansas	19	1	....	3	23	1	1	....	7	8	32	38	558	644
Kentucky	2	....	....	2	4	....	....	....	....	....	4	4	156	247
Louisiana	8	1	....	5	14	....	....	....	1	1	15	12	341	255
North Louisiana	6	1	....	3	10	....	....	....	....	....	10	1	111	79
South Louisiana	2	....	....	2	4	....	....	....	1	1	5	11	230	176
Michigan	11	4	....	3	18	1	1	1	10	12	31	....	281	211
Mississippi	2	....	....	4	6	....	....	....	3	3	9	5	145	38
Missouri	....	....	....	....	....	....	....	....	....	....	....	1	15	8
Montana	....	....	....	....	....	....	....	....	....	....	....	....	73	104
Nebraska	....	....	....	....	....	....	....	....	....	....	....	....	2	7
New Mexico	5	....	....	1	6	....	....	....	....	....	6	10	184	155
New York	15	....	10	....	25	....	....	....	....	....	25	25	386	462
Ohio	2	4	....	4	10	....	....	....	....	....	10	8	271	310
Oklahoma	20	4	1	7	32	2	....	....	5	5	39	32	831	579
Pennsylvania	27	4	15	3	49	1	....	....	....	....	50	47	1,072	1,041
Tennessee	....	....	....	....	....	....	....	....	....	....	....	....	1	6
Texas	77	5	....	32	114	1	2	....	30	32	147	133	2,719	2,086
E.Tex.Bor. Co.'s	1	3	....	....	4	....	....	....	....	....	4	....	33	5
E. Texas Field	....	....	....	....	....	....	....	....	....	....	....	....	....	3
Rest of E. Texas	....	....	....	....	....	....	....	....	....	....	....	7	78	109
North Texas	17	....	....	10	27	....	....	....	11	11	38	31	601	482
W. Central Tex.	2	1	....	3	6	....	....	....	3	3	9	8	173	147
West Texas	35	....	....	4	39	....	....	....	6	6	45	35	721	575
Tex. Panhandle	3	....	....	9	12	....	....	....	....	....	12	8	236	79
G. Coast, Upper	7	....	....	5	12	....	2	....	2	4	16	15	267	189
G. Coast, Lower	10	....	....	1	11	1	....	....	3	3	15	19	387	316
Southwest Texas	2	1	....	....	3	....	....	....	3	3	6	8	191	149
S. Central Tex.	....	....	....	....	....	....	....	....	2	2	2	2	32	32
West Virginia	....	11	....	1	12	1	....	....	....	....	13	23	286	346
Wyoming	....	....	....	....	....	....	....	....	....	....	....	....	60	58
Total U. S.	241	34	26	72	373	7	6	1	75	82	462	432	8,956	8,088

* Includes distillate wells. † Includes salt water disposal wells.

swabbing at the rate of 25 barrels of oil an hour on a 3-hour test. Arbuckle lime was topped at 3195 feet and a core to 3200 feet showed spotted saturation. With 5-inch pipe set at 3195 feet and after cement plug was drilled out to 3200 feet the well filled with 1550 feet of oil in a 3-hour period.

Barton County: Two miles west of the Pritchard pool, Champlin Refining Company has opened a new gas area at Christianson 1, NE SW NE 29-20s-14w, which flowed an estimated 8 million cubic feet of gas from Arbuckle lime through casing perforations between 3605-11 feet, with a trace of oil and water. Total depth is 3650 feet.

Harper County: Six miles south of Duquoin the only well drilling in the county was giving indications of becoming a producer from the Mississippi lime zone. Lion Oil Refining Company's Muir 1, SE SE SE 10-31s-8w, topped the lime at 4389 feet and set pipe at 4480 feet. After perforating at 4390-95 and 4403-12 feet and acidizing with 5000 gallons crews were bailing about 15 barrels of fluid, 50 percent oil. Testing continued.

Forest Hill Area: Harry Gore completed Luerman 1, SW NE 28-15s-12w, in the Topeka lime at 2825-33 feet, a new producing horizon for the field which produces from the Gorham and Arbuckle zones. The well was rated a physical potential of 695 barrels daily.

Cowley County: Rooks Hall Operating Company revived interest in the old Winfield pool with the completion of Wise 1, SE SE NW 1-33s-4e. The strike is in the Elgin sand in the southern sector of the field which has been dead for some years. The Wise well was completed as a 200-barrel daily pumper from 1818-24 feet.

Meade County: Stanolind Oil & Gas Company stepped out 5 miles to the east of its recent Adams 1, a long extension to the Hugoton gas field completed for 88 million cubic feet of gas daily, staking Adams 1 in SW C 7-35s-29w. The well is being drilled on core information. Stanolind owns about 95,000 acres of leases comprising the 3 Adams ranches in Meade County.

Norton County: Helmerich & Payne, Inc.'s discovery well in the new Ray West pool, Hansen 1, C SW NE 26-5s-21w, was given a physical potential of 102 barrels of oil plus 5 percent water per day from Arbuckle lime at 3650-56 feet. This well is level on the Arbuckle with wells in the Ray pool 2 miles east and since there are no dry holes between the areas it is believed both pools will be linked up.

Indian Leases to Be Sold

A sale of oil and gas leases on 8078.26 acres owned by members of the Five Civilized Tribes will be held at Muskogee, Oklahoma, June 12. Sealed bids will be opened at 10 a.m. Counties in which leases are offered include Washington, Nowata, Creek, Okmulgee, Okfuskee, Hughes, Seminole, Coal, Pontotoc, Garvin, McClain, Grady, Stephens, Jefferson and Carter.

The next Osage oil lease auction will be held at 1:30 p.m., June 19, at Pawhuska, Oklahoma. Listings of unsold tracts in Osage County are now being prepared.

☆ West Texas

Deep Permian Discovery Made in Gaines County

Deep Permian discovery in Northwestern Gaines County; Southern Cochran County is assured of oil strike in the San Andres; deeper oil zone given the Noelke field, Crockett County. Ellenburger oil flow in the TXL field attains importance.

Ector County: Phillips Petroleum Company's T. P. Land Trust 1-A, 1⅝ miles north by east of Devonian production in the TXL field and on the apex of the structure as outlined to date, flowed 131 barrels of 42.3-gravity sweet crude with gas-oil ratio of 1115-1 during 1-hour drill-stem test at 9640-9700 feet in Ellenburger, topped at 9610 feet. The well flowed an additional 58 barrels of oil into tank after the tool was closed. The well was deepened to 9775 feet, where it tested dry with packer at 9698 feet, and will make another test at 9800 feet.

Shell Oil Company's Thomas 1-A, ⅞ mile north of the field's Devonian discovery and 2¼ miles northwest of the Phillips' project, became the first Ellenburger completion with natural potential of 1547 barrels of 44-gravity oil, gas-oil ratio 1192-1, through ½-inch tubing choke from open hole at 9705-9852 feet. This strike entered the Ellenburger at 9695 feet, being 280 feet high to the field's Devonian discovery, which tested water in Ellenburger. These 2 Ellenburger wells proved dry in the Devonian, but indicated commercial production in the Silurian, which will eventually become the third pay for the area, although possibly confined to the high point of the structure. The Devonian production may be restricted to accumulation on the southwest flank of the structure.

The Texas Company's T. P. Land Trust 1-B, 1½ miles southwest of Devonian producer, became the first failure for the area in plugging at 9339 feet.

Deep prospecting will be expanded to other Ector County areas. Stanolind Oil and Gas Company's Scharbauer 3-Q, C NE SW PSL 12, Block A, is a 10,000-foot Ellenburger test for the north end of the Goldsmith field, which has not been explored below the San Andres. The Texas Company's Connell 29, C NE NW PSL 9, Block B-16, 1½ miles west of the Penwell field, has the same objective.

Cochran County: Stanolind Oil & Gas Company's Edwards 1, PSL 13, Block L, near the south line of the county and 10½ miles west of production, was running pipe to complete at 5111 feet after showing for an oil discovery in the San Andres, topped at 4310 feet with elevation of 3807 feet. A drill-stem test at 5024-5102 feet yielded 360 feet of gas-cut mud, 720 feet of oil- and gas-cut mud, 540 feet of free oil, and 180 feet of oil-cut water. This area was rated as a firm prospect due to fair to good oil shows logged by failures 5 miles southwest, 7 miles west by south, and 4 miles northwest. No shows were recorded by a failure 5½ miles to northeast, although it entered the San Andres only 29 feet lower. An expansive productive area is anticipated. The well is on a lease farmed out by Texas Pacific Coal & Oil Company because of October expiration. Short-term leases held by others will expedite outlying development.

Gaines County: Amerada Petroleum Corporation's E. H. Jones 1-A, C NW NE PSL 3, Block A-6, and 4¼ miles southwest of the Yoakum County sector of the Wasson field, uncovered a new lower Permian sour oil area with probably 106 feet of pay, and was making a drill-stem test at 9219 feet before drilling through the section. This wildcat recovered 450 feet of rotary fluid slightly oil-cut, 2500 feet of oil and gas-cut mud, 5320 feet of 32-gravity sour and dark brown oil, and 630 feet of oil-cut muddy water when a drill-stem test was made at 9085-9142 feet. The top of the pay, tentatively identified as Basal Wichita-Albany, was called at 9090 feet with elevation of 3699 feet. Base of this porous zone was placed at 9196 feet. Jones 1-A is 5⅓ miles north of Continental Oil Company's Jones 1-A, failure in Ellenburger at 11,845-12,222 feet.

Upton County: Humble Oil & Refining Company's Parrott 1, previously indicated deep Permian discovery in drilling to hard chert at 10,744 feet, flowed 252 barrels of 40-gravity oil natural on 18½-hour gauge through 17/32-inch choke from broken pay perforations at 9100-9893 feet. The gas volume is subnormal. Flowing pressure on casing was 710 pounds, while tubing pressure dropped to 100 pounds. Acid treatment will follow. This wildcat blew out while drilling at 9576 feet, and flowed by heads. The company' Gresham 1, a mile west by north, was drilling shale at 8165 feet.

Midland County: Humble's Buchanan 1, 9 miles southeast of Midland, was drilling dry lime at 11,525 feet, while last indicated production consisted of 5330 feet of heavily gas-cut mud when tester was used at 11,411-11,495 feet. A commercial gas-distillate well appeared probable when tester was used at 10,315-10,388 feet. Top of Devonian was tentatively called at 10,410 feet.

Crane County: The Atlantic Refining Company's University 1, prospective gas-distillate strike at 7913-8024 feet in Devonian, topped at 7890 feet with elevation of 2551 feet, tested dry at 8028-80 feet, and was making a third test in lime and chert at 8175 feet. This wildcat entered the Mississippian at 7400 feet, and Woodford shale at 7710 feet. The Mississippian and Devonian correlate 627 feet and 284 feet high, respectively, to Gulf Oil Corporation's University 1-F, 2 miles northeast and a failure in the Ellenburger at 10,628-10,659 feet.

Gulf's Henderson 1-E, 2⅞ miles northwest of nearest Sand Hills field production, plugged back from water in Ellenburger at 6584-6625 feet to 4450 feet with 7-inch pipe at 4350 feet. Rated flow of 10 million cubic feet of dry gas was passed up in the Clear Fork at 4350-4424 feet.

Gulf's Hobbs 1-D, indirect north offset to the Crossett field's Devonian discovery, missed the pay and was drilling lime and chert at 5456 feet.

Crockett County: Ledge Petroleum Company's Bouscaren 1, near NW NE NE HE&WT Ry. 29, Block GG, has uncovered a deeper oil zone in the gas-cap area that separates the Noelke and North Noelke fields. First oil was en-

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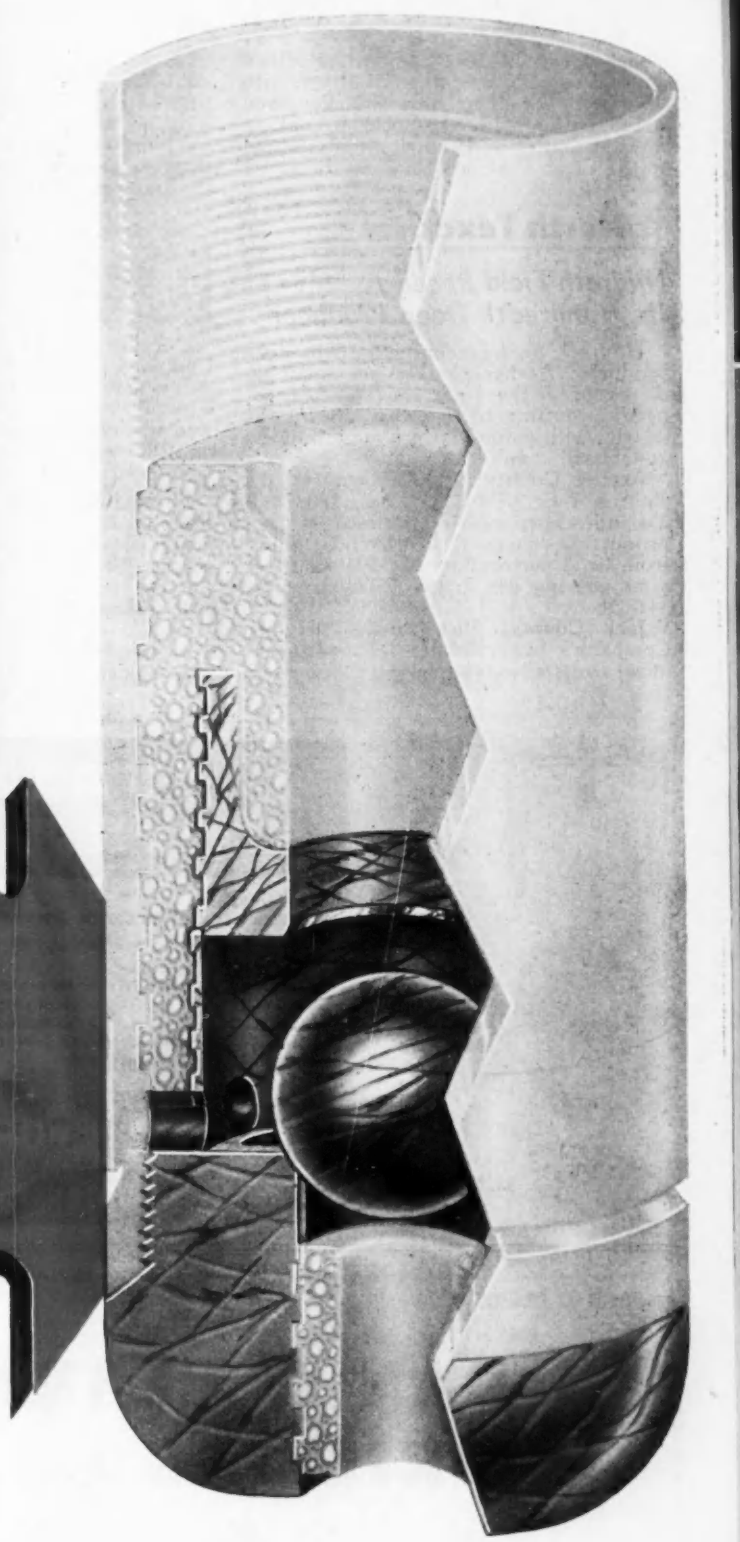

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countered at 3972 feet, and when drilled to 4075 feet the hole filled 2500 feet with 34-gravity oil. The zone will be given a nitro shot, with prospects of making a steady oil flow. Production is credited to the Clear Fork section of the Permian.

☆ North Texas

Hildreth Field Receives Its Hundredth Deep Producer

Hildreth field receives its 100th deep producer; Archer County has pumping discovery in the Bend lime; deep prospecting shifting to the west side of the district with emphasis on King, Childress and Foard countires.

Archer County: L. T. Burns et al's Benson 1-E, TE&L Co. Sec. 1808 and 3¾ miles northwest of the nearest deep production, pumped 75 barrels initial from bend perforations at 4594-4600 feet after proving dry in the Ellenburger at 5428 feet.

Jack County: Panhandle Refining Company's Cherryhomes 1-A, southeast offset to its Cherryhomes pool discovery in Bend at 5035-50 feet, tested 2,500,000 cubic feet of high pressure gas from perforations at 5012-27 feet, having plugged back from shale at 5565 feet. Perforations will be made opposite oil saturation in sandy-lime at 5127-35 feet. Continental Oil Company's Cherryhomes 1-A, east offset to the discovery, was completing through perforations at 5032-54 feet. A good well is anticipated as it showed 2800 feet of oil on a drill-stem test at 5020-48 feet prior to drilling through the section to shale at 5105 feet.

Continental and Sinclair Prairie Oil Company's Cherryhomes 1, John Irvin survey and 1½ miles north of Cundiff, entered dry Bend lime at 5410 feet for a thin section, and was drilling at 5520 feet on Ellenburger contract. No deep tests have been drilled in this general area.

Montague County: Hildreth field has completed its 100th oil producer and is firmly established as the fourth largest source of high-gravity oil in the district. Current production is approximately 6300 barrels daily, while cumulative to May 1 is estimated at 2,100,000 barrels from Bend lime and conglomerate; Basal Strawn overlying the Bend; and a dual producer from the Bend and the 7200-foot Simpson.

Nu-Enamel Oil Operating Company has been the most successful in advancing production to the north, northwest and west. This firm's Posey 1 extended the field to the southwest corner of the J. Castleberry Survey with natural potential of 854 barrels of 42-gravity oil through ½-inch choke from perforations at 5950-80 feet, although dry in the Bend, topped at 5988 feet. The field currently has 2 wells in process of completion, and 7 active tests.

Cooke County: The Texas Company's Bulkeley 1, Ordovician prospect near the Grayson County line, was drilling shaley-lime at 6992 feet, apparently eliminating the Strawn as a source of production. The company's Hutson 1-C, 1⅛ miles east of a shallow wildcat producer in Montague County, was drilling shale at 3858 feet.

☆ East Texas

Manziel Field Deep Oil Zone Expanded Southwest

Manziel Field deep oil zone expanded a mile southwest; heavy distillate yield anticipated for Coke field's deep discovery awaiting completion gauge.

Wildcats: The Ohio Oil Company's Popper 1, Hunt County failure in Smackover at 9390 feet, was flowing water with a nominal show of gas from Travis Peak perforations at 5830-50 feet. Humble Oil & Refining Company's Maness 1, eastern Cherokee County, entered the Georgetown at 4845 feet, and cemented 9-inch protection string at 4895 feet. G. L. Walker et al took over Foster et al's Bowling-Pure 1, Travis Peak failure at 8370 feet near the Lone Star pool, and will attempt to make an oil producer from Nacatoch sand at 3350-60 feet.

Freestone County: The Texas Company's Sneed 1, 4200 feet south by west of its Fairfield gas-distillate discovery at 8232-97 feet, was coring at 7950 feet in Travis Peak, topped at 7919 feet, being 5 feet low. A drill-stem test of Pettit porosity at 7728-43 feet yielded a small amount of gas with drilling fluid.

Manziel Field: Magnolia Petroleum Company's Herring 2-A, Samuel Burch Survey and east offset to the most southerly Paluxy well in the field, extended the Pittsburgh (Basal Rodessa) a mile southwest in flowing 100 barrels of 44.4-gravity oil on 21-hour gauge through ¼-inch choke on testing tool. Tubing will be run for completion. This extension well is bottomed at 8745 feet, with combination string of 5½- and 5-inch casing cemented at 8728 feet. The field has a gas-distillate well and a pumper in the 8500-foot horizon, which did not indicate production in Herring 2-A.

Winnsboro Field: Magnolia Petroleum Company's Harp 1-A, northwest offset to the most westerly producer, entered the Gloyd, lower pay, at 8200 feet, being 38 feet low, and tested dry after acidizing through perforations at 8200-25 feet. This zone absorbed only 400 gallons of an attempted 3000-gallon acid treatment under 3000 pounds pressure. Perforations have been squeezed for test of the 7900-foot Bacon.

Coke Field: Amerada Petroleum Corporation's Faulk 3, prospective gas-distillate discovery and offsetting 6300-foot

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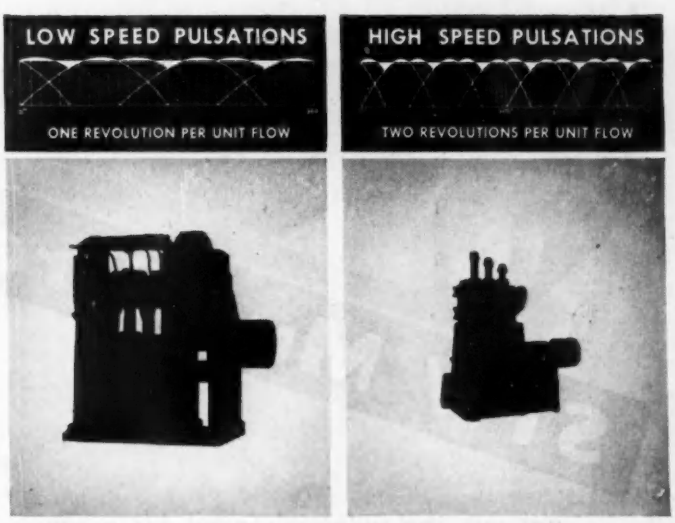

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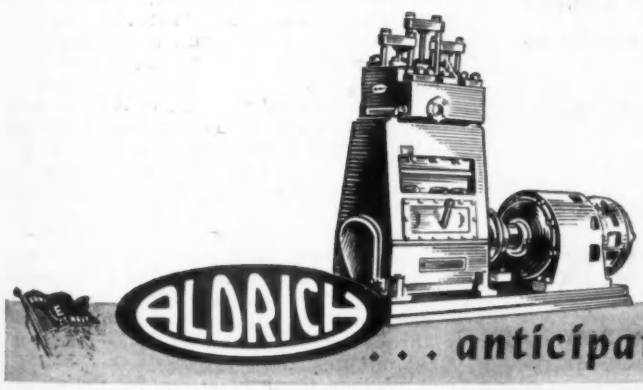

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Paluxy producers, was making a production test through perforations opposite the entire Young zone at 8080-8130 feet. The well is bottomed at 8375 feet, with 5½-inch casing at 8185 feet. The thick Paluxy oil zone may be repressured if ample gas is available, while the gas is needed for treating cut-oil and for pumping fuel.

Shell Plant Approved

Shell Oil Company has been issued a special order by the Texas Railroad Commission to operate a recycling plant in the Bruchy Creek and Hope fields of Lavaca and DeWitt counties on the Lower Texas Coast.

Proposed capacity of the plant is 60 million cubic feet daily.

☆ South Central Texas

Humble Gets Completion In Atascosa County Field

Humble completes oiler in Imogene field; wildcat tests spudded in Atascosa and Bexar counties; test fails in Guadalupe County.

Atascosa County: Humble Oil & Refining Company has completed a producer in the Imogene field. The Joseph Courand 1 flowed 16.8 barrels of oil and 4.64 barrels of water in 24 hours through a 3/16-inch choke from open hole at 7661-69 feet. Tubing pressure was 75 pounds with the gas-oil ratio being 1234 to 1.

F. A. Callary has spudded Ruth D. Davis 1, Navarro Survey, wildcat test 4 miles southwest of Poteet.

Milam County: Curtis Kelley and Don McGregor have spotted a 5000-foot wildcat test 1 mile north of Baileyville. It is the Ellison Brothers 1 in the A. L. Taylor Survey.

Bexar County: H. A. Pagenkopt has spudded Max Blum 1, 5000-foot test in the Gas Ridge field.

Guadalupe County: R. V. Muckelroy's Tom H. Baker 1, wildcat test 3 miles west of Luling, has been abandoned in the Edwards Lime.

☆ Southwest Texas

Wildcats Staked in Duval, Starr and Zapata Counties

Wildcat tests staked in Duval, Starr and Zapata counties; South Government Wells test to be deepened; wildcats in Starr area abandoned.

Starr County: Sun Oil Company is preparing to drill a 7500-foot wildcat test 17 miles east of Rio Grande City. The test is the S. Cantu et al 1 in Porciones 39 and 40.

In the Ross field, W. L. Goldston of Houston staked his A. M. Kelsey 7-C in Porcion 87. On the southwest side of the Garcia field, Sun spotted its Frost National Bank 14-B in Porcion 96.

Two dry holes have been reported for Starr County pools. W. L. Goldston's E. B. Carruth 4-C in the Boyle field was a failure at 4162 feet. In the Garcia pool, Sun abandoned J. G. de Salazar 1 at 3938 feet.

Duval County: J. W. Gorman was preparing to move in material for a 4800-foot wildcat test 11 miles southeast of Freer. It is the J. Alanis 1 in the M. Alanis Survey 20.

Duval Oil Company has applied for a permit to deepen its Bishop Cattle Company 9, South Government Wells pool, to 2700 feet.

East of Crestonia, Argo Oil Corporation's Dionicio Garcia 1 has been abandoned at 5324 feet.

Zapata County: Dulup Oil Company has located a 2500-foot wildcat test 10 miles south of Petroleum. It is the San Juan Ramirez et al 1 in Survey 7.

☆ Lower Texas Coast

Wilcox Sand Pool Being Opened in Goliad County

Wilcox sand field being established in Goliad County; Bridwell opens San Patricio County pool; protection pipe set in deep Willacy County wildcat test; prospective Bee County pool opener prepares to test.

Goliad County: A new Wilcox sand oil pool has been opened 2 miles south of the Slick-Wilcox field at Transwestern Oil Company's William Altman 1. Drilled to 8000 feet, the well plugged back and was cleaning into pits without official gauge through a 3/32-inch choke from perforations at 7640-58 feet. Tubing pressure is 1300 pounds and casing pressure 325 pounds. On a drill-stem test this well recovered 4500 feet of oil through perforations at 7648-52 feet in 30 minutes.

Willacy County: Magnolia Petroleum

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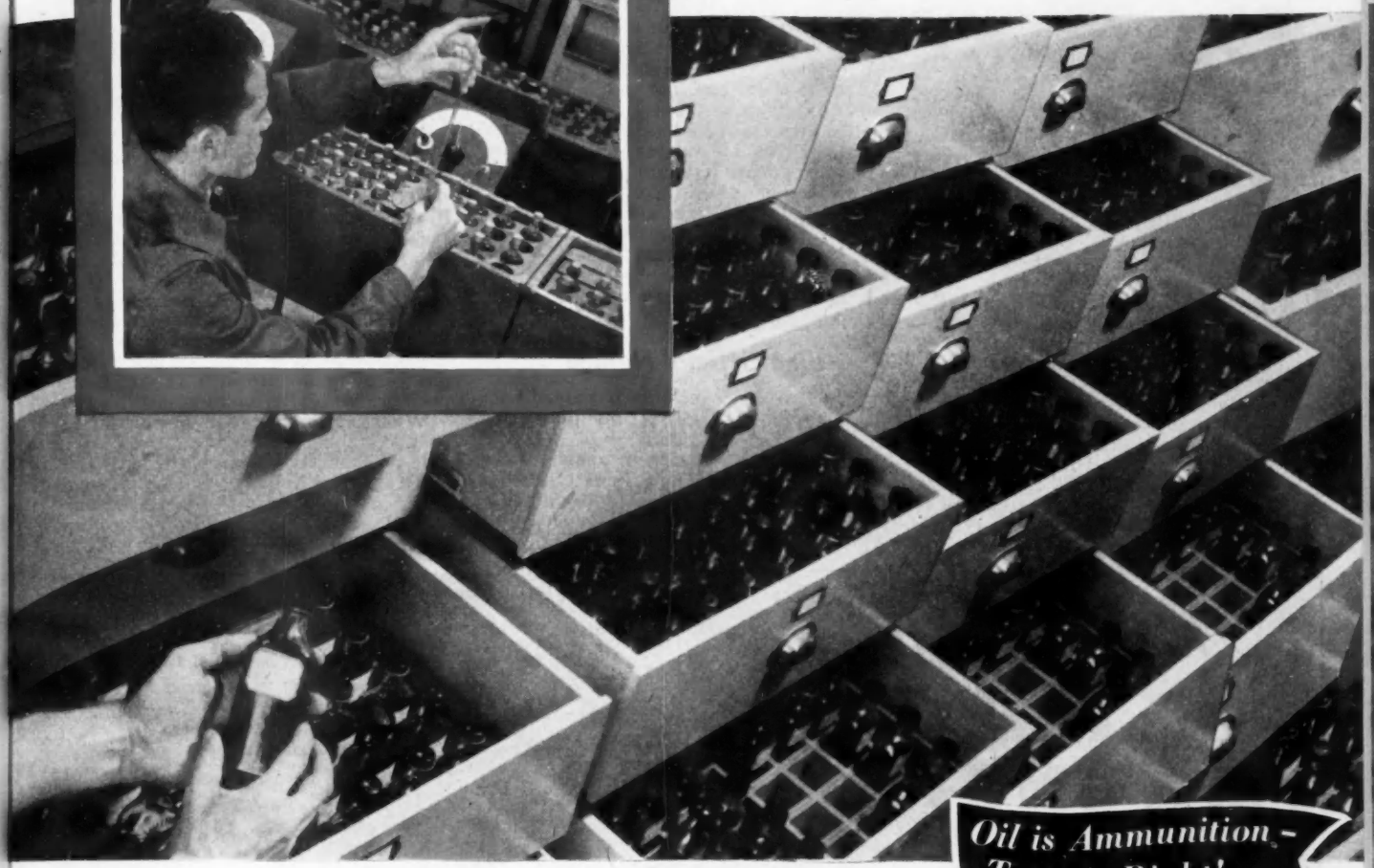

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Company and J. S. Abercrombie Company's N. H. Dohe 1, important wildcat test 3 miles southwest of Raymondville, has landed 7-inch protection casing at total depth of 10,019 feet. Operators will drill to contract depth of 11,000 feet before making tests of sands logged around 8500 feet which carried odor of oil and gas.

San Patricio County: Bridwell Oil Company's Bertha Willmann 1, Delgado Grant, wildcat discovery 1 mile southwest of Mathis, flowed 132 barrels of 22.5-gravity oil daily through a 5/32-inch choke from perforations at 4553-56½ feet. Tubing pressure was 410 pounds, casing pressure 610 pounds, with a gas-oil ratio of 228 to 1.

Lavaca County: Sterling Oil & Refining Corporation's Henry Rochelle et al 1, in the Hope field, flowed 3 million cubic feet of gas and 106 barrels of 48.6-gravity condensate on a 24-hour gauge from 7720-35 feet. Tubing pressure was 2200 pounds and casing pressure 2450 pounds.

W. Stewart Boyle of Houston has located a 7500-foot wildcat test 7 miles southeast of Moulton. It is the R. Pohler 1 in the James Callahan Survey.

Jackson County: Crown Central Petroleum Corporation's W. L. Moody, Jr. 1, wildcat discovery well in the Moody Branch field, gauged 78 barrels of 42.3-gravity oil in 24 hours through a 6/64-inch choke from perforations at 8834-40 feet. Tubing pressure was 1800 pounds and casing pressure 2000 pounds.

Moore & Ahern of Houston have located a 7000-foot wildcat test 4 miles north of Vanderbilt. It is the A. Michalek, Sr. 1 in the J. J. Linn Survey.

Refugio County: P. R. Rutherford of Houston has completed Mary J. Dodson A-1 in the Bonnie View field for 61.32 barrels of 23.7-gravity oil daily through a 7/64-inch choke from perforations at 4580-82 feet. Tubing pressure was 225 pounds and casing pressure 825 pounds.

Bee County: Navarro Oil Company has landed 5½-inch liner on bottom at 7013 feet in Forrest A. Dahl 1, wildcat test 3½ miles northeast of Pettus. Operator planned to start production tests this week.

Natural Gas Pipe Lines Shown on Jacobson Map

A new map showing natural gas pipe lines of the United States has been announced by E. C. Jacobson, Maps, of Tulsa. Shown are not only individual pipe line systems but also major gas fields, cities and towns where distribution facilities are operated by pipe line company or affiliate, and index of operating companies and states in which natural gas pipe lines are located.

The size of the map is 48 inches by 75 inches and prices are, paper, $32.50, linen, $35. E. C. Jacobson, Maps are located at 801 McBirney Building, Tulsa 3, Oklahoma.

Pipe Line Official Named

David E. Day has been named vice president in charge of manufacturing and pipe lines for Richfield Oil Corporation. Formerly assistant manager of manufacturing and pipe lines, Day has been with Richfield since 1923 and has been acting manager since the death of Albert M. Kelley on January 7.

☆ Upper Texas Coast

Gas and Distillate Pool Given Colorado County

Gas and distillate pool opened in Colorado County; outposts completed in Colorado, Montgomery and Brazoria county pools; oil production established at South Hillje; Walker County Woodbine sand wildcat recovers salt water on initial test.

Colorado County: Shell Oil Company has opened a new gas and distillate pool in the Englehart area 4 miles north of Garwood. On a 24-hour gauge the Kyle Estate 1 flowed 62 barrels of 50.2-gravity distillate and 3,160,000 cubic feet of gas through a ¼-inch choke from perforations at 8780-95 feet. Tubing pressure was 2029 pounds and casing pressure 2143 pounds.

Sinclair Prairie Oil Company has made dual completion on its Tulane Gordon 1, about 1 mile southwest of the discovery well in the Frelsburg pool. On perforations at 8847-8917 feet the well gauged 119.3 barrels of condensate daily through a 3/16-inch choke with 7,100,000 cubic feet of gas. Tubing pressure was 2795 pounds. From perforations at 8462-82 feet it flowed 41.4 barrels of condensate daily with 2,550,000 cubic feet of gas through a 3/16-inch choke. Casing pressure was 1725 pounds.

Wharton County: Oil production has been established in the South Hillje field at Sam G. Harrison's G. P. Willis, R. B. Wallace & R. H. Hancock 1, southwest of the operator's T. N. Mauritz et al 1 gas discovery. The oil producer flowed 103 barrels of 28.5-gravity oil

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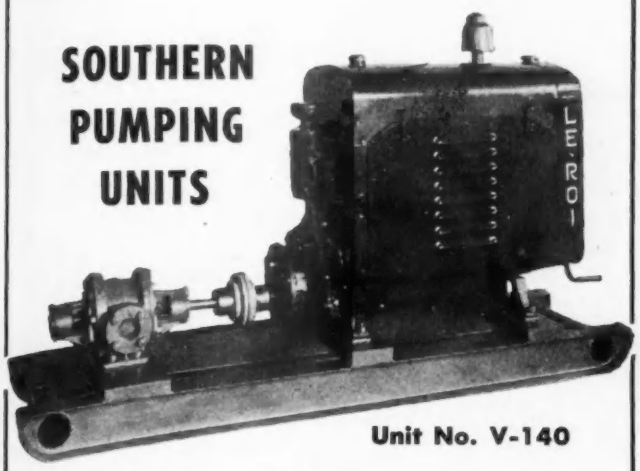

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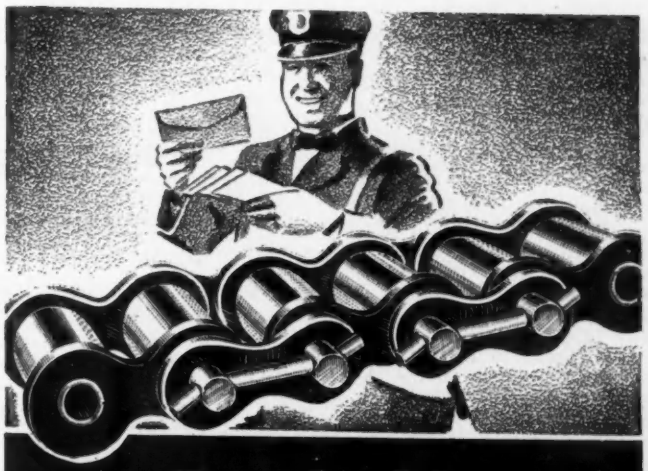

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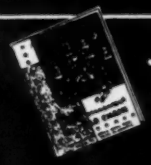

Union Bulletin O-1 covers Oil Field Chain. Ask for your copy.

UNION CHAINS

daily through a 7/64-inch choke from perforations at 5230-44 feet. The gas discovery was completed at 5226-32 feet making 1,000,000 cubic feet of gas daily along with 2 barrels of 41.8-gravity oil.

Brazoria County: Final completion has been made at Glenn H. McCarthy's Willella W. Smith 1, northwest of the operator's Wilson 1 discovery well in the Blue Lake pool. The Smith 1 was plugged back from 10,250 feet and perforated at 8656-61 feet. In 24 hours the well flowed 651 barrels of 36-gravity oil through ¼-inch choke. Tubing pressure was 1250 pounds.

Stanolind Oil & Gas Company's Suderman 1, wildcat in the HT&B survey 9, was being delayed with a fishing job at 12,505 feet.

Walker County: Magnolia Petroleum Company's Thompson Brothers-Texas Long Leaf Lumber Company 1-A, Woodbine sand wildcat south of the Kittrell field, recovered salt water on initial test at 9960-65 feet. Operator was making a squeeze job and will test higher.

Montgomery County: Stanolind Oil & Gas Company and Atlatl Royalty Company's H. M. McMahan 1, John Dorsey Survey, on the east side of the Lake Creek field and ¾ mile southwest of Superior Oil Company's 1 Frost, on an 8-hour gauge flowed 86 barrels of 48-gravity condensate along with 2,363,000 cubic feet of gas from perforations at 11,550-620 feet. Tubing pressure was 2400 pounds, casing pressure 2550 pounds, with the gas-oil ratio 26,081/1. Shutin pressure was 3650 pounds.

Chambers County: Sun Oil Company's Elizabeth H. Moore Estate 1, in the Double Gum area, has been completed for 41 barrels of 37.6-gravity oil plus 50 percent salt water from 8280-85 feet. Tubing pressure was 225 pounds.

☆ South Louisiana

Iberia Wildcat Sets New Deep Producing Record

Wildcat discovery well in Iberia Parish sets new deep producing record; second oiler completed in Thornwell field; new operator enters Neale pool; further development seen in West Tepetate area; 12,000-foot test staked in Lafourche Parish.

Iberia Parish: A new world's deep producing record has been established at Shell Oil Company's Smith-State 1, 13-14s-6e, wildcat discovery well in the Weeks Island area, 20 miles south of New Iberia. With total depth of 14,023 feet, the well was plugged back and perforations made at 13,505-520 feet. On a 24-hour gauge the well flowed 140 barrels of 44.9-gravity distillate through a 10/64-inch choke along with 2,385,000 cubic feet of gas. Tubing pressure was 4586 pounds with the gas-oil ratio being 17,000 to 1. Shutin tubing pressure was 4659 pounds. The well is producing from the Miocene formation. Previously, the world's deep producer was Union Producing Company and Fohs Oil Company's Buckley-Bourg 2, at DeLarge, Terrebonne Parish. This well was completed through perforations at 13,498-503 feet.

Cameron Parish: Cities Service Oil Company has completed a second producer in the Thornwell field. The company's Lacassine 2, south of the discovery well, flowed 31.4 barrels of condensate and 1,797,000 cubic feet of gas daily through a 10/64-inch choke from perforations at 9631-41 feet.

In the same area, Cities Service has spotted D. J. Benoit 2 in 36-11s-5w.

In the Creole field, The Superior Oil Company and The Pure Oil Company's State-Gulf of Mexico 12 has been abandoned at 8518 feet.

Beauregard Parish: A new operator has entered the Neale field with Lyons & Prentiss of Shreveport staking Rice Land and Lumber Company 1 in 34-3s-11w. Contract depth is 11,500 feet.

Jefferson Parish: The Texas Company's State-Barataria Bay 1, wildcat in East Barataria Bay, was reported drilling deeper after setting 7-inch casing at 12,000 feet.

Plaquemines Parish: Gulf Refining Company's State QQ 42, in the Quarantine Bay field, has been completed for 369 barrels of oil daily through a 5/32-inch choke from 9542-50 feet.

Jeff Davis Parish: Barnsdall Oil Company's Minos D. Miller 6, in the West Tepetate field, made salt water on drill-stem tests at 9296-9316 feet. After squeezing, pipe was reperforated at 8508-18 feet where the well followed at the rate of 813 barrels of oil daily on a drill-stem test through ¼-inch chokes, 662,000 cubic feet of gas. This test was in a sand which heretofore has shown on gas in other wells in the field.

Lafourche Parish: The California Company has staked a 12,000-foot wildcat test 4 miles southwest of LaRose. It is the Delta Farms 1 in 60-17s-21e.

Terrebonne Parish: Sun Oil Company's Realty Operators 1, wildcat test in the Crescent area, was being delayed at 10,225 feet with stuck drill pipe.

At South Houma, Pan American Production Company's LaTerre Land Company 2 was coring below 10,889 feet in sand and shale.

Tulsa Office to Handle Hugoton Applications

All applications for individual drilling operations in the Hugoton Gas Field will be handled through the Tulsa office, it was announced by PAW.

Requests should be addressed to John F. Swab, acting director, Natural Gas and Natural Gasoline Division, 414 Beacon Building, Tulsa 6, with a copy sent also to PAW at Washington.

The Hugoton field was designated a restricted area under PAO-11 last month because of the current shortage of drilling material and because more wells were being drilled or proposed than PAW regarded as necessary.

Majors Negotiating for 3000 Acres in Oregon

Two major oil companies, Richfield Oil Corporation of Los Angeles and The Texas Company, have opened negotiations with the Multnomah, Oregon, county commissioners for the leasing of about 3000 acres of county-owned land near the Linton district of Portland. Under Richfield's proposed lease the company would pay the county $1 an acre a year and agree to start drilling within 90 days.

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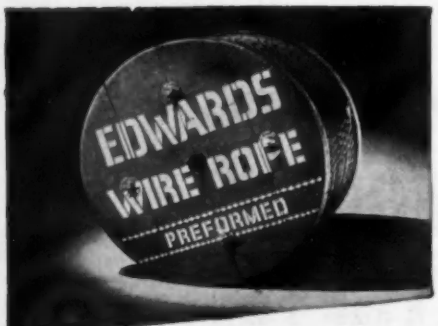

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☆ North Louisiana

Test of Bienville Wildcat Indicates New Oil Field

Good show in Bienville Parish wildcat indicates new oil field; Bossier Parish outposts continue to test; number of other wildcats testing; 2 wildcats and 2 new field stakes made.

Bienville Parish: Following 25 years of exploration in the Gibsland area, oil was finally produced. The Ohio Oil Company's Woodward Walker 1, in 31-17n-7w, flowed an estimated 27½ barrels of oil in 2 hours on various size chokes on a drill-stem test. First production was recorded from the lower Pettit, between 6829 and 6856 feet, following 216 shots and acidization with 1500 gallons. A double packer was set on tubing following perforations with 160 shots at 6799 to 6819 feet in the Upper Pettit which is said to be probably more productive than the lower zone. The Upper Pettit was also acidized with 1500 gallons. When the well was opened it began to flow and cleaned itself into pits.

Bossier Parish: Vaughn and Hurley's closely-watched Ellerbe 1, about 2½ miles northwest of the discovery well in the Benton area, on latest test flowed 28 barrels of distillate, 16 barrels of salt water and 480,000 cubic feet of gas per day through ¼-inch choke. Gas-oil ratio is 18,000-1. Testing was being continued through perforations from 8036 to 8042 feet opposite the D sand of the Cotton Valley.

Barnsdall Oil Company's Welori Lumber Company 1, 1½ miles southeast of the discovery well, cored at 8473-75 feet, recovering sand with a slight show of gas. A drill-stem test was being run at 8450-8475 feet.

Caddo Parish: H. M. McBride staked a wildcat, Texas Company-J. S. Jolly, in 27-22n-15w. The company will drill to the Rodessa. Phillips Petroleum Company is coring below 5680 feet at Leake 1, Longwood outpost, and reports the well 30 feet higher than the discovery well, the Moneyham 1, drilled by the same company.

Claiborne Parish: Hunt Oil Company is to drill a wildcat, W. T. Owens 1, in 15-23n-7w. It is to be a 5500-foot test. Rig is being moved in. In the Haynesville field, Arkansas Fuel Oil Company is to drill the Waller-Taylor Unit 2, in 14-23n-8w, to the Cotton Valley.

Red River Parish: Whitehurst Drilling Company has located S. L. Herold et al 3, in 1-12-11w, Bull Bayou field. Company tools will be used to go to 2800 feet.

The Ohio Oil Company completed Pardee Company 1, 36-22-10, flowing 66.96 barrels of oil in 5½ hours on a 24/64-inch choke. Tubing pressure is 2104 pounds and casing pressure 2220 pounds. Gas-oil ratio is 16,620-1.

Caldwell Parish: The Atlantic Refining Company abandoned Louisiana Central Lumber Company C-1, wildcat in 14-12-3e, at 3855 feet. Shell Oil Company tested 6,200,000 cubic feet of gas and 1 barrel of fresh water per day at the Louisiana Gas and Oil 1, wildcat, through a 18-64-inch choke on tubing. Casing pressure was 1700 pounds and tubing pressure 4400. The well has been shut in.

Sabine Parish: R. A. Whitehurst pumped 10 barrels of oil in 24 hours from the Burkett 2, 9-9-13, having gone to 2000 feet.

Union Parish: The Interstate Natural Gas Company gauged Fee 163 at 1,727,000 cubic feet of gas daily.

Concordia Parish: The California Company staked A. B. Learned 2, in 23-9-10e, Lake St. John field. In the same field, The Carter Oil Company prepared to plug the Mrs. I. D. Neal, 33-9-10, a deep test, after perforations were made between 10,348-62 and between 10,235-58 feet. In both cases the recovery was salt water and very small amount of gas.

☆ Arkansas

Five Completions Include Two Wildcat Failures

One wildcat out of seven locations staked; 2 wildcat failures among 5 completions reported.

Columbia County: G. H. Vaughn staked J. F. Smart D-4, SE SW NE, 13-15-20, in the Stephens field. Also in this field, T. W. Lee is to drill the Hobson 2, SE NE NW 15-15-20. In the Atlanta field, Deep Rock Oil Corporation is to drill B. Davis 1, in C NW NE 17-18-19.

H. B. Ownby completed J. W. Smart 3-D in the Stephens field as a pumper with initial production recorded at 130 barrels of oil and 130 barrels of salt water in a day. Total depth is 4055 feet. A wildcat failure was Mayfield Drilling Company's W. A. G. Woodard 1, SE NE 6-17-19w which was abandoned at 7502 feet.

Desha County: W. S. Goodman plans to drill the Banks 1, NW SE 32-9-4w.

Ouachita County: Durbin Bond is to drill the J. B. Morgan A-2 in the Stephens field, 18-16-15.

Seventy-five barrels of oil per day are being pumped from R. H. Crow Trustee's H. D. Brown 2-A in the Stephens field. From Brown B-1, 18-15-19, 300 barrels of oil flowed from 3911-22 feet.

Union County: R. L. Millan is drilling at 1600 feet at the J. T. Murphy 2, NW SW SE 8-16-15, in the Smackover field.

Cleveland County: E. E. Moore's Victor Moore 1, a wildcat, was declared dry and abandoned at 4116 feet.

ICC to Inquire Into All Phases of Gas Industry

The interstate oil compact commission will inquire into all phases of the natural gas industry in a meeting in Oklahoma City June 14-16.

"The meeting will be devoted wholly to a study of the gas industry," Foster said, "and nationally prominent authorities are being invited to present papers and statements on its various phases. The commission expects to have reports on the whole field of natural gas, from discovery to consumption. When the report of the meeting is published," he declared, "it will present a complete picture of the gas industry today."

The commission, composed of 14 oil and gas producing states, will have its committees at work all day June 14 in the Biltmore Hotel, headquarters for the meeting.

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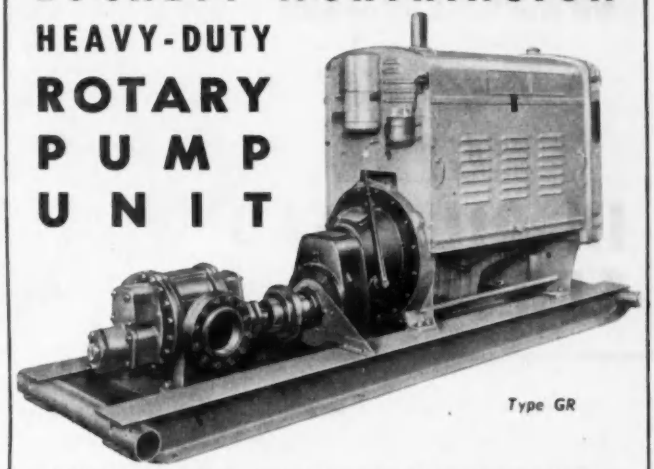

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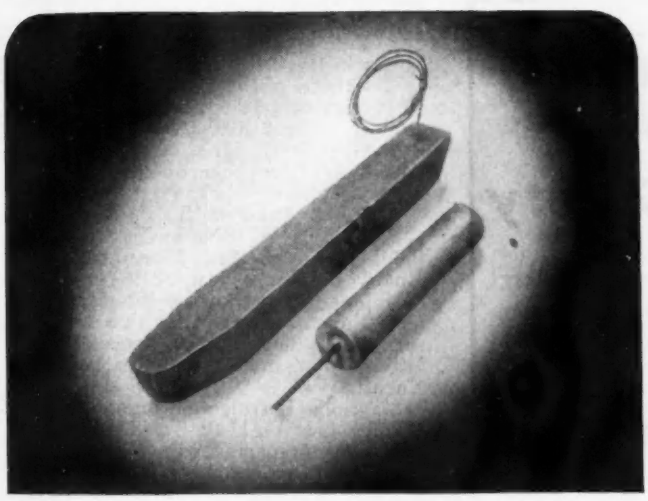

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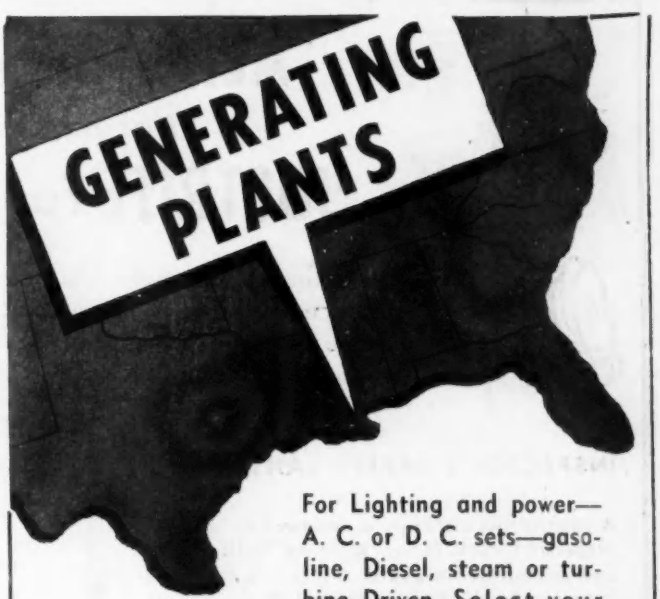

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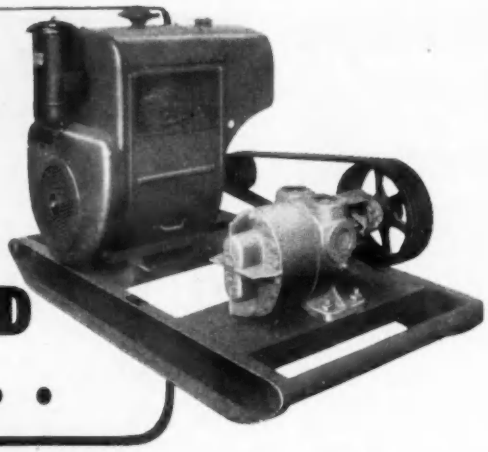

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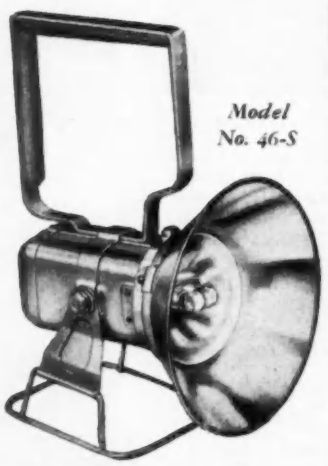

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☆ Mississippi

Heidelberg Field Receives Its Eightieth Producer

Eightieth producer registered in Heidelberg field; Cranfield production extended northeast; Eucutta test recovers better grade of oil; dual completion in offing for Baxterville; Shell enters oil play.

Jasper County: Fohs Oil Company's Lewis Lightsey 2, SWc 18-1n-13e, in the East Heidelberg field, is about to be completed for the eightieth producer in this field. Production is from perforations opposite the Christmas sand.

Hinds County: The Carter Oil Company's W. G. Davis 1, C NE NE 15-3n-4w, wildcat venture which had been watched with interest, was abandoned at 10,000 feet. Indications of gas were revealed in tests taken in the Eutaw and Massive sand zones, but quantities recovered were very slight.

Adams County: The California Company's Ella G. Lees 3, 29-7n-1w, in the Cranfield field, has been completed to extend the field more than a mile northeast. On its first production test the well flowed 290 barrels per day through 9/64-inch choke with gas-oil ratio of 1070/1. Production is from 72 perforations opposite basal sand between 10,303-15 feet. California's M. T. Hickingbotham 2, 66-7n-1w in the Cranfield area is reported to have had successful tests in the lower horizons. The well is now drilling below 10,459 feet.

Wayne County: Gulf Refining Company's W. F. Davis 1, NWc SW 2-9n-9w, Eucutta field, has tested a much better grade of oil than has been produced so far in this field. Drill-stem tests taken in 2 sections of the Eutaw horizon below 5100 feet recovered 1250 feet of 33.3-gravity oil and 1360 feet of 30.6-gravity oil, respectively. Most of the production in this field has been of oil of less than 20-gravity.

Lyons & Prentiss' T. F. Reynolds 3, C SW NW NW 18-9n-8w in the Eucutta field, has perforated 3 sections of the Eutaw horizon below 5219 feet and is swabbing after running tubing to 5221 feet. Indications are that this well may turn out to be a good producer of higher gravity oil than was found earlier in the Eucutta pool.

Magnolia Petroleum Company's G. S. Stanley 4, NWc 17-9n-8w in the Eucutta field, was preparing to set casing after running electrical log. The well has reached 5205 feet in the Eutaw formation. Sun Oil Company's Mrs. Addie Finley 1, 7-9n-8w in the Eucutta field, has been completed with an initial production of 18.8-gravity oil in 19 hours. Production is from perforations opposite the Eutaw horizon.

Jeff Davis County: Gulf's V. G. Gholar 1, SWc SE 27-9n-19w in the Gwinville field, swabbed salt water with no oil show after testing Basal Tuscaloosa zone. The well was perforated at 9280-90 feet with 60 shots and tubing run to 9278 feet with packer at 9231 feet. It was swabbed down 1200 feet from surface. Perforations will be squeezed out and casing perforated higher up the hole, where pay has been indicated.

Lamar County: Sun's Snowden 1, NWc NW NE 7-1n-16w in the Baxterville field, was set for a dual completion. On

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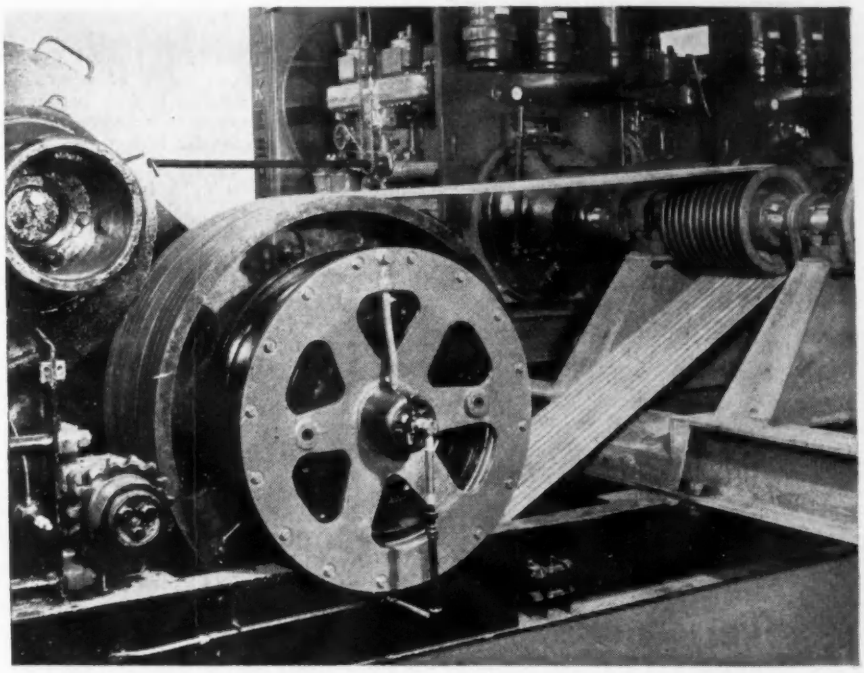

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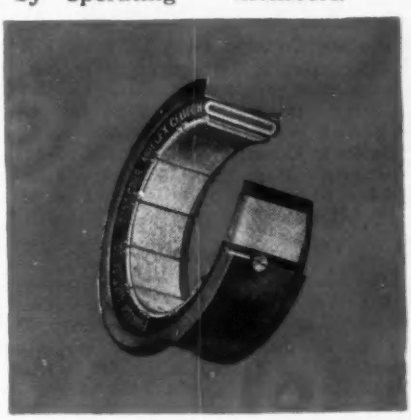

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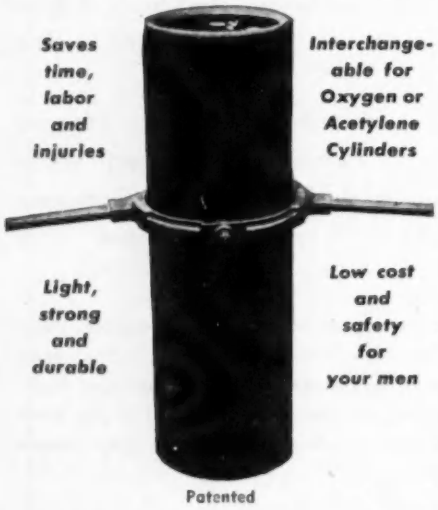
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a drill-stem test with perforations at 8670-80 feet and 8688-98 feet opposite the Massive sands the well flowed 334 barrels of 15.1-gravity oil in 15 hours with a gas-oil ratio of 371/1. Gas production is from perforations between 7716-42 feet in the Tuscaloosa horizon.

Gulf's W. E. Davis 1, NWc 7-1n-16w in the Baxterville field, is drilling below 8411 feet in the Marine Tuscaloosa. Cores from 7800-20 feet recovered porous gas-condensate sand. Gulf's W. J. Howard, SEc SE NW 17-1n-16w in Baxterville, is drilling below 6050 feet with no shows indicated.

The Superior Oil Company's R. Batson 2, NWc SW SE 17-1n-16w, which attempted to extend production southward in the Baxterville area, has reached 10,505 feet with no indications of commercial production. Light shows of gas-condensate and oil had been recovered from cores taken in the Tuscaloosa and Massive Sand zones.

Attala County: Shell Oil Company's H. H. Wheeless 1, C NE NE 5-14n-9e, 4 miles north and 11 miles east of Kosciusko, is making location for the company's first play in Mississippi. The well will explore the deeper horizons as 2 previous wildcat ventures in this county which were drilled to 4437 feet and 5735 feet were abandoned without any shows.

Jones County: Gulf's D. J. Flynt 1, C SW NE 35-9n-12w, wildcat, has been abandoned at 9021 feet in the Comanchean with no shows. Gulf's W. A. Valentine 1, NWc NE NW 4-9n-13w, has also been abandoned in the same horizon at 8305 feet.

Alabama

Washington County: Wayne Refining Company's Willie Mitchell 1, SEc NW NE 12-8n-3w which had reported shows of oil at 2050-55 feet, is drilling below 4380 feet. J. T. Parks' S. A. Hobson 1, C SW NE 9-8n-2w, the only other well in the county, was shut down waiting orders after drilling to 3185 feet.

Walker County: Glen D. Rose Oil & Gas Company's Ulysses 1, NW SE 6-13s-6w, was preparing to install a larger rig after having reached 2001 feet with no shows reported.

Bullock County: Capital Oil & Gas Company's Mrs. Ethel Gholston 1, SEc 18-14n-22e, which was spudded in May 7, is drilling below 150 feet in shale.

Florida

Humble Oil & Refining Company's Gulf Coast Realty 4, NEc 20-48s-30e, in the Sunniland field of Collier County, 8000 feet north of the discovery well, cemented 7-inch casing at 11,564 feet and was waiting on cement. This well may make a better producer than the field discovery. A drill-stem test of 1 hour and 26 minutes recovered 5990 feet of oil, 6000-foot water cushion, 10 feet of salt water and 30 feet of salty oil-cut mud. Test and cores were made at 11,549-97 feet, total depth.

Charlotte County: Humble's Lownes-Treadwell 1, C SW NE 17-42s-23e, was abandoned at 2130 feet. Operators skidded over to start anew.

Highlands County: Humble's G. C. Carleton Estate 1, C SW NE 17-38s-23e, cleaned hole and was drilling below 8183 feet in chalky lime.

Madison County: Hunt Oil Company's J. W. Gibson 1, C SE SE 5-2s-11e, is drilling below 3544 feet.

Monroe County: O. D. Robinson's State 1, NEc NW 29-59s-40, has resumed drilling after making repairs and is below 3845 feet.

Bay County: Magnolia Petroleum Company's State 4-B, C SW SW 21-3s-15w, is drilling below 6188 feet in shale with streaks of sand and lime. Cores taken have revealed no shows. Top of Eutaw by cores was indicated at 4255 feet.

Mississippi Board Says Spacing Rules Adequate

Present regulations for the spacing of oil, gas and condensate wells are adequate, it was declared in an order issued May 14 by the State Oil and Gas Board of Mississippi.

The board declared that evidence had been heard with regard to spacing regulations in the Carthage Point, Cranfield, Baxterville, Gwinville, Hub, and Soso fields and that "from the evidence adopted at said hearing the board finds that waste of oil, gas or condensate appears to be absent in each and all of the fields referred to."

The order read as follows: "The board heard no objection to the present regulations regarding the use of material which governs the spacing of wells drilled in the exploration for oil, gas and condensate of the Petroleum Administration for War, and while the board was furnished with proposed rules and regulations by producers and potential producers of oil, gas, and condensate the board finds that the evidence submitted is inadequate to justify, at this time, the issuance of field rules governing: 1. drilling units; 2. spacing requirements; 3. gas-oil ratio requirements; 4. determination of oil allowable; and 5. allocation to spacing units."

The board adopted three regulations. The first was that field rules for the fields referred to be held in abeyance. Second, that each producer of oil, gas and condensate in the fields referred to complete the submissal of the information requested. Finally, each operator shall avoid waste.

The majority of the operators interested in Mississippi favor a 320-acre spacing unit for condensate wells, and it was observed by informed circles that this unit will apply under PAW regulations until such time as the State Oil & Gas Board accumulates enough data to set up its own regulations.

The board also issued an order for a "Well Status Report and Gas-Oil Ratio" form which must be submitted periodically to the board.

The order set forth that each producer of oil, condensate and gas shall submit this report each month giving complete information and data requested. The order went on to state that the report must be filed on or before the 15th day of the next succeeding month.

Kansas Hearing Set

Kansas Corporation Commission will hold a hearing May 25 at 10 a.m., at the Allis Hotel, Wichita, Kansas, to prescribe rules relating to the production of oil, to fix new quotas for pools and percentages of production for wells within pools for June, and to determine the market demand for natural gas during June, July and August from the Otis field of Rush and Barton counties and the Cunningham field of Kingman and Pratt counties.

☆ California

Twenty-Two Wildcats and Outposts Drilling in Kern

Twenty-two wildcats, including outposts, drilling in Kern County; 3 wildcats drilling in San Luis Obispo County with 2 others idle; Shell Oil Company's 2 deep tests at Long Beach are drilling at 12,274 feet and 10,728 feet, respectively.

Kern County: Twenty-two wildcats and outposts are drilling in this county with 13 rigs up and 14 locations spotted, in addition to several suspended drillers. Standard Oil Company of California's Cahn 58-4, Lost Hills deep test, was reaming at 9655 feet. The hole logged 13 feet of oil sand at 9641-9654 feet.

Only 3 new locations were announced during the week for Elk Hills Naval Reserve with the drilling campaign fast being reduced to 5 active rigs to hold production around 65,000 barrels a day.

Los Angeles County: Shell is making new hole at 2 of its deep tests at Long Beach, while its deep test at Dominguez is fishing for drill pipe at total depth of 12,455 feet. At Long Beach, Alamitos 48-A was drilling sand and shale at 12,274 feet and Stakemiller-Rose 1 was also in sand and shale at 10,728 feet. This hole has a string of 7-inch casing cemented at 10,186 feet and has penetrated an oil sand which produced some oil, but not sufficient for a commercial producer.

San Luis Obispo County: There were 3 wildcats drilling in this county in addition to 2 idle holes. Richfield Oil Company-Sun Oil Company's Gonyer Unit 1, 34-12w-25w, reached 4277 feet in hard shale and was fishing drill pipe.

Jackson Barnett Case Is Closed as Attorneys Paid

One of the country's most famous law suits was officially closed at Muskogee, Oklahoma, when more than a score of attorneys received checks for legal services rendered during the settlement of an oil fortune estimated at more than $1,500,000 which was left 10 years ago by Jackson Barnett, eccentric Creek Indian.

Checks totaled $329,110.02 and were authorized by the Department of the Interior. Three of the atorneys who participated in the case have since died. Many never knew the rich Indian. The legal battle was the most highly publicized court case in the annals of Oklahoma. With the attorneys collecting more than a quarter of the estate the balance has been divided among some three dozen Indian heirs. An attempt by Anna Laura Lowe to receive a wife's share was denied by the United States Supreme Court which reviewed the Barnett case.

Among those who received checks for attorney fees and expenses were J. Garfield Buell of Tulsa, $58,545.51; Tom Anglin and Alfred Stevenson, Holdenville, $56,514.28; Criminal Court of Appeals Judge Dick Jones, Okemah, $55,246.84; former Governor Leon C. Phillips, Weleetka, $16,355.95; George Jennings, Sapulpa, $13,689.18; R. S. Cate, Muskogee, $12,872.13; L. O. Lytle, Sapulpa, $16,204.82; N. S. Gibson, Harve Maxey and W. J. Holleman (deceased), Tulsa, $19,308.20.

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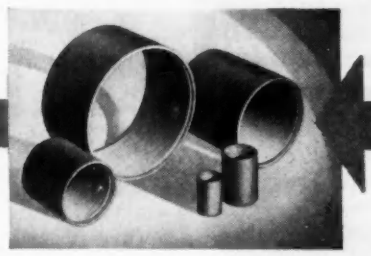

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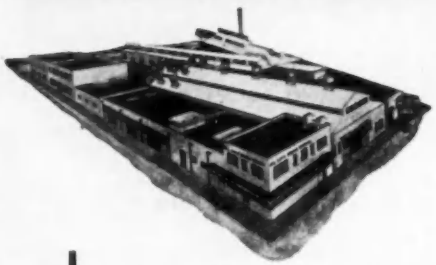

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☆ Michigan

Wildcat in Kent County Logs Traverse Objective

Kent County wildcat shows 400 feet of oil; Ionia County well under test in Traverse; production work on deep horizon discovery in Mecosta County is delayed.

Kent County: S. L. McCall's Hutchins 1, NE NE SW 25-9n-11w, Algoma Township, logged objective Traverse lime at 2200 feet and showed 400 feet of oil at 2204 feet where drilling was suspended to set and cement 5-inch casing. The wildcat is just outside the village of Rockford and 12 miles northeast of the old Grand Rapids Traverse field. It is the first wildcat in the southwestern part of the state this year to show discovery promise.

Ionia County: Fox Hole Oil Company's Roose 1, N½ N½ NE 33-7n-5w, Lyons Township, was under test in the Traverse following a plugback from 2828 to 2408 feet. Original abandonment plan, after drilling Dundee dry, was deferred to retest a Traverse lime show. After a 40-quart shot from 2396-2408 feet the well showed some free oil and gas.

Mecosta County: Production work on Sun Oil Company's Wilson 1, S½ SE SE 35-17n-8w, ½ mile north of a deep horizon discovery, was still delayed by inability to get a water shutoff on the 5-inch casing set at 5035 feet.

Michigan Officials Named

P. J. Hoffmaster, director of the Michigan Conservation Department and Supervisor of Wells, has been reappointed by the Conservation Commission.

The Commission also appointed Harold M. McClure of Alma, independent producer, and W. P. Clarke of Saginaw, land agent, Gulf Refining Company, to two-year terms on the State Oil Advisory Board.

The Commission named Harold Titus of Traverse City, a commissioner since 1927, as its new chairman. He succeeds Harry Whitley of Dowagiac, newspaper publisher, chairman the past two years.

☆ Illinois Basin

Clay County, Illinois, Has New Producing Area

New area opened near Sailor Springs pool, Clay County, Illinois; Wayne County test shows for small producer in Rosiclare; White County well testing in Cypress; Hamilton County extension given final completion gauge; well near Cairo pool, Kentucky, makes good showing on drill-stem test.

Clay County: Paul Doran has opened a new area with Brisseden 1, SE SE SW 16-3n-7e, 2 miles southwest of the Sailor Springs pool. The well was completed in Tar Springs sand at 2315-30 feet, for 31 barrels of oil and 18 barrels of water per day.

Wayne County: Magnolia Petroleum Company's Borah 1, C SW 4-1s-9e, east of the south end of the Clay City pool and 4 miles southwest of production in the Bennington pool, showed for a small producer in the Rosiclare. During a test of the formation at 3043-45 feet, the well yielded 24 barrels of oil and 4 barrels of water after 1000 gallons of acid. Operator was drilling deeper for additional tests.

White County: Yoder's Holland 1, NE SW SW 36-6s-9e, a 1-mile west extension of the Herald pool, was still testing Cypress sand at 2692-2721 feet. While cleaning out, the hole filled with 400 feet of oil in 1½ hours.

Marion County: Paul Doran has set 5½-inch casing to test Cypress sand at Young 1, SE NE SE 12-2n-1e, 2 miles southwest of the Salem pool. During a 1-hour drill-stem test of Cypress sand at 1746-61 feet, the well made 240 feet of gas, 160 feet of oil and 10 feet of oil-cut mud. Operator was ready to drill plug.

Hamilton County: T. B. Dirckson's Presley 1, SE SE SW 5-6s-6e, a northeast extension of the Rural Hills pool, has been given a final completion gauge in the Aux Vases sand. With pay at 3094-3117 feet, the well made 185 barrels of oil and 3 barrels of water in 24 hours.

Effingham County: Ashland Oil and Refining Company's Weibking 1, SE SE NE 29-6n-7e, 9 miles east of the Mason pool and 4 miles north of Bible Grove, was completed for 400 barrels of oil daily.

Jefferson County: The Texas Company's Eubank 1, SW NW SE 35-2s-1e, a Devonian discovery in the Woodlawn pool, has been placed on pump for production test of pay at 3726-40 feet. The well swabbed 70 barrels of oil and a slight amount of water in early tests.

Jasper County: Robinson and Puckett's Roberts 1, NE NE SE 26-7n-10e, a Jasper County wildcat, showed for 150 barrels of oil per day on pump and was still testing. McClosky pay breaks were encountered at 2600-10 feet and 2692-2703 feet.

Kentucky

Henderson County: National Associated Petroleum Company's Denton 1, 4-O-23, an extension of the Rock Springs pool, pumped 86½ barrels of oil and no water in 12 hours from Cypress sand at 2250-52 feet, the latter figure total depth.

John L. Sallee's Lyles 1, 21-O-22, 2 miles southwest of the new Cairo pool, pumped 215 barrels of oil and no water in 13 hours from Cypress sand at 2280-2301 feet. The well made an excellent showing during a drill-stem test.

Officers and Directors of Wilcox Company Reelected

Officers and directors of the Wilcox Oil Company were reelected at meetings of stockholders and directors held in Tulsa, Oklahoma.

Officers reelected included Edward M. O'Herron, Charlotte, North Carolina, chairman of the board; F. H. Dunn, president; M. P. Appleby, vice president and treasurer; Horace B. Clay, general counsel and assistant secretary; Carl L. Miller, secretary and assistant treasurer; J. L. Keefe, assistant secretary and assistant treasurer. With the exception of O'Herron all are residents of Tulsa.

Directors reelected included all company officers as well as Hunter L. Martin, Tulsa; Howard O. Babcock, Buffalo, New York; H. H. Gillpatrick, Kansas City, Missouri, and John A. Kienle, Graysonville, Maryland.

☆ Canada

Sunburst Sand Success Indicated at Princess

Sunburst sand success indicated at Princess; oil showing in Madison at deep Foothills wildcat; Standard Oil Company of California's drilling rig program increased to 4 rigs.

Princess: Peerless Syndicate 1, lsd 4 18-20-11w4, indicates 150 barrels daily of 27-gravity oil from Sunburst sand. Located ¼ mile east of Standard's Princess 2, Sunburst-Chert zone discovery well, and 4 miles southeast of Standard's Devonian discovery well, the Peerless topped Sunburst at 3169 feet, porous to 3178 feet. This section showed 1,500,000 cubic feet of gas and some oil. A shale break at 3178 feet was followed by porous sand to 3184 feet, where shale was entered and drilling was completed. With Packer set at 3178 feet, a 90-minute drill-stem test of the lower part of the sand showed a 550-foot rise of crude oil, with gas flow between 25,000 and 50,000 cubic feet daily. Casing was set to shale break to shut off upper Sunburst gas. The well will go on production test shortly.

Calling Valley: Calling Valley Oils 1, lsd 6 24-21-3w5, deep wildcat 4 miles east of the Turner Valley field, showed favorable indications in top of the Madison lime. After topping Madison at 9720 feet and setting 7-inch casing, the well drilled a narrow porous zone at 9745-57 feet. A 9-hour drill-stem test showed a gas flow of 12,000 cubic feet per day, with a drop of 56.7 distillate from the end of outlet pipe. Fluid recovery in pipe was some mud and a small amount of 40.1-gravity oil, with no evidence of water. Hard lime was encountered at 9757-59 feet, followed by porous lime to present bottom at 9796 feet. The latter zone was being tested before deepening.

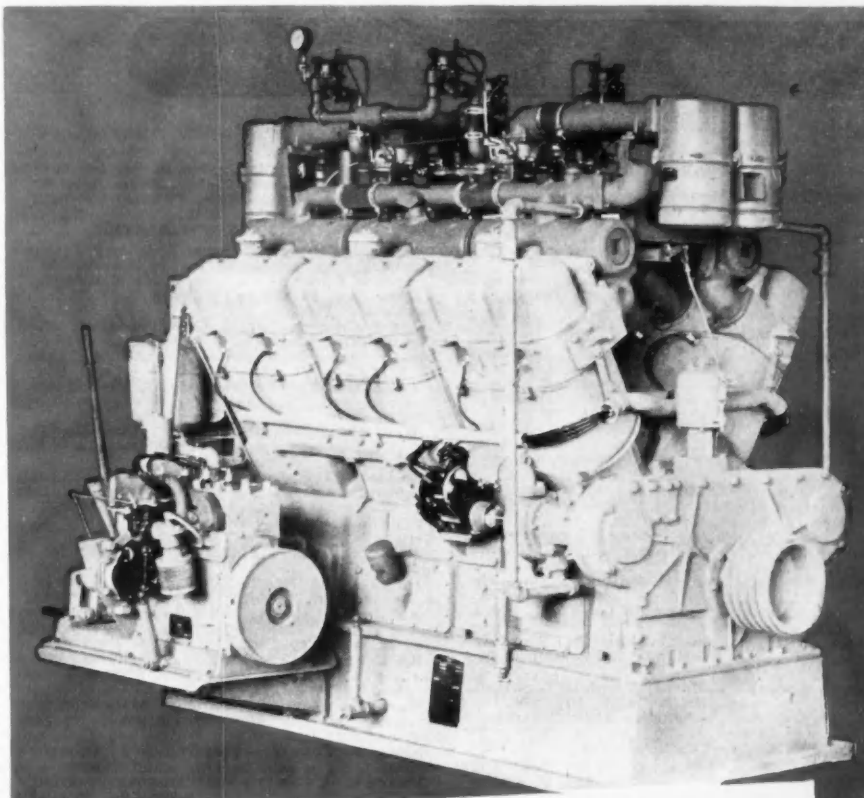
Conrad: Standard has stepped up its number of working rigs in this South Alberta Plains area to 4 in an effort to outline and determine prospects of Ellis sand oil pool with the least possible delay. With 2 wells now drilling in the area, Standard has staked 2 more sites and was installing equipment. One new site, Conrad-Province 15-32B, is ½ mile south of Standard's No. 2 discovery well. The second new site, Conrad-Province 15-35B, is 3 miles due east.

Bruderheim: Kitalta Oils, Ltd., Ontario independent, has started Bruderheim 1 in lsd 5 20-55-20w4, on the Central Alberta Plains, 25 miles northeast of Edmonton. The wildcat will test a shallow indicated Dome outlined by electromagnetic survey.

War Strain Puts More Texas Wells on Pump

The strain on Texas oil wells to produce large additional quantities for the war effort is reflected in a marked decline in the number of flowing wells and a sharp increase in the number which have to be pumped, the Texas Mid-Continent Oil and Gas Association pointed out recently.

"Texas had 40,524 flowing oil wells in 1941 compared with 37,629 in 1944," the Association said. "In the same period, the pumping wells increased from 59,177 to 62,144."



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EXPLORATORY COMPLETIONS

ARKANSAS WILDCATS

Cleveland County—Failure: E. E. Moore's Victor Moore Est. 1, sw ne 28-9s-10w, abnd 4116 ft.

Columbia County—Failure: Mayfield Drlg. Co.'s W. A. G. Woodward 1, se ne 6-17s-19w, abnd 7502 ft.

Newton County—Failure: William S. King's O. F. Moten 1, nw ne sw 25-17n-19w, abnd 320 ft.

CALIFORNIA WILDCATS

Fresno County — Failure: The Texas Co.'s Boychester 3, 18-21s-15e, Coalinga area, top Lower Variegated 2882 ft, top Kreyenhagen 3043 ft, had 8 ft oil sand at top of Lower Variegated, abnd 3065 ft in shale.

Kern County—Failure: Amerada's S.P. 23-23, 23-29s-29e, Ant Hill area, Olcese 2619 ft, Schist 4200 ft, abnd in basement material 4220 ft.

Kings County—Failure: H. H. Magee, Operator's Von Glahn 17-1, 17-23s-22e, Tulare Lake area, abnd 4104 ft.

Los Angeles County—Failure: Continental's Turnbull Comm. 6, 13-2s-11w, Turnbull Canyon area, abnd 2066 ft, shale.

Santa Barbara County—Failures: Bel Air Oil Co.'s Price 1, 21-8n-32w, Los Alamos area, swabbed mud and wtr with trace oil, abnd 5166 ft.

Union Oil's Fugler 1, 3-9n-33w, Bradley Canyon area, ran elec log, abnd 6480 ft in shale.

Solano County—Failure: Standard's Suisun Comm. 6, 32-4n-1w, Suisun area, top Nortonville 4174 ft, top Domengine 4952 ft, tested wet, abnd 5425 ft.

Ventura County — Failure: British-American's Richardson Rch 1, S. Mt. area, abnd 4485 ft.

CALIFORNIA OUTPOSTS

Los Angeles County—Del Valle Failure: R. E. Havenstrite's Vasquez 13, abnd in shale 9708 ft.

Kern County — Race Track Hill Oil Discovery: Kern Oil Co.'s 28-34, 34-29s-29e, flow 1872 bbls 41-gr oil, 2% wtr, 750 mln gas, 2-in, td 5421 ft.

FLORIDA WILDCAT

Charlotte County — Failure: Humble's Lownes-Treadwell 1, c sw ne 17-42s-23e, jknd & abnd.

ILLINOIS WILDCATS

Christian County—Oil Discovery: J. W. Taft et al Fee 1, (OWDD) n½ se ne 15-15n-3w, pump 4 bbls, Rosi 816-20, 825-33 ft, otd 1850 ft, td 2355 ft.

Effingham County — Failure: Wm. H. Krohn's Haarmaan 1, sw sw sw 25-8n-5e, abnd 2448 ft.

Jefferson County—Failure: A. K. Swann et al Fuller 1, sw ne nw 13-2s-1e, abnd 2416 ft.

Lawrence County—Failure: Parriott Sprowls' Mullins 1, ne ne se 35-5n-12w, abnd 1128 ft.

Wabash County—Failure: Geo. H. Engle's McKendree College 1, sw nw se 15-1n-13w, abnd 2818 ft.

Wayne County—Failure: Ashland O&R Co.'s McLin 1, ne se sw 33-1s-8e, abnd 3366 ft.

INDIANA WILDCAT

Gibson County — Failure: Ashland O&R's Smith 1, sw sw nw 34-3s-11w, abnd 2590 ft.

KANSAS WILDCATS

Barton County — Failures: Lauck & Moncrief's Beck 1, ne ne se 30-18s-11w, Arb 3433 ft, wtr, abnd 3483-85 ft.

Lion O&R Co.'s Wolf 1, ne nw nw 36-19s-15w, Cong 3563 ft, Arb 3595 ft, Reagan 3685 ft, abnd 3739 ft.

Dickinson County — Oil Discovery: Nat'l. Drlg. Co.'s Doyle 1, c e½ ne se 22-16s-4e, Miss chat 2275-2308 ft, pump 88 bbls oil, 20 bbls wtr, td 2308 ft.

Leavenworth County — Failure: Brewer & Kelley's Thomas 1, swc se 24-11s-22e, green shale 389-394 ft, sd 663-670 ft, abnd 705 ft.

Lincoln County—Failure: W. M. Bartlett et al's Zahradink 1, se se nw 18-15s-10w, Lans 2938 ft, Simp 3265 ft, Arb 3308 ft, abnd 3344 ft.

Reno County—Failure: Phillips et al's Baden 1, sw sw nw 16-26s-10w, Lans 3507 ft, Simp 4337 ft, Arb 4396 ft, abnd 4428 ft.

Rooks County—Failure: Ed Swearer et al's Biggs 1, c w½ nw sw 29-6s-18w, Cong 3590 ft, Arb 3593 ft, Base K. C. 3469-73 ft, abnd 3644 ft.

Stafford County—Failure: Mid-Plains et al's Heneisen 1, nw cor Lans 3374 ft, Simp 3670 ft, Arb 3710 ft, abnd 3735 ft.

NORTH LOUISIANA WILDCAT

Caldwell Parish — Failure: Atlantic's La. Central Lbr. Co. 1, 1650 fr el 330 fr nl 14-12-3e, abnd 3860 ft.

SOUTH LOUISIANA WILDCAT

Cameron Parish—Failure: Superior of Calif.-Pure's State-Gulf of Mexico 12, sur lcn 5560.08 s 201.68 e of nwc 4-15-8w, bottom hole 660 s of lcn, abnd 5818 ft in hard shale.

MICHIGAN WILDCATS

Allegan County—Failure: J. R. Van Arnam's Brandt 1, nw sw ne 28-3n-15w, abnd 1380 ft.

Arenac County—Failure: Sun's Van Horn 1, nw nw sw 26-20n-7e, Dundee 3258 ft, abnd 3489 ft.

Clare County—Surrey Gas Discovery: Mich. Consolidated Gas Co.'s Frizzell 1, c ne 23-17n-5w, Stray sd 1458 ft, flow 475,000 ft gas, td 1471 ft.

Ionia County—Failure: Fox Hole Oil Co.'s Roose 1, n½ ne 33-7n-5w, Traverse, abnd 2830 ft.

Kent County—Failure: Mich. Devonian Pet. Co.'s Van Ess 1, se nw nw 10-5n-12w, abnd 1792 ft.

Mecosta County—Failure: C. W. Collin's Fountain 1, ne sw sw 4-13n-7w, Dundee 3689 ft, td 3875 ft.

Clinton County—Failures: Smith Pet. Co.'s Kellam 1, sw ne ne 33-8n-4w, Traverse li 2549 ft, so 2575 ft, Dundee 2930 ft, abnd 3000 ft.

Union Dr. & Prod. Co.'s Piggot 1, (OWDD) se se sw 30-8n-3w, otd 3042 ft, abnd 3925 ft.

Kalamazoo County — Failure: Stuart Godfrey's Stuart 1, ne sw se 34-3s-12w, Traverse 1192 ft, abnd 1285 ft.

Kent County — Failure: Fisher-McCall's Eardley 1, se se se 32-6n-10w, Traverse 1693 ft, abnd 1995 ft.

Muskegon County — Failure: Muskegon Development Co.'s Richards 1, sw nw ne 10-12n-15w, abnd 1240 ft.

Newaygo County — Failure: E. L. Bourret's Booher 1, ne se se 8-4n-14w, abnd 2240 ft.

Tuscola County — Oil Discovery: Shell's Hutchinson 1, ne ne nw 21-14n-10e, elev 690 ft, Traverse 1882 ft, Dundee 2565 ft, Monroe 2988 ft, Sylvania 3568 ft, pump 9 bbls oil, 7 bbls wtr, td 3945 ft, pb 2760 ft.

MISSISSIPPI WILDCATS

Hinds County—Failure: Carter Oil Co.'s W. G. Davis 1, c ne ne 15-3n-4w, Eutaw 7885 ft, Tuscaloosa 8440 ft, Massive 9354 ft, abnd 10,000 ft.

Jones County—Failure: Gulf's D. J. Flynt 1, c sw ne 35-9n-12w, Eutaw 6667 ft, Tuscaloosa 7223 ft, Massive 8604 ft, abnd 9023 ft.

Madison County—Failure: Carter Oil Co.'s Virgil Jones 1, c nw ne 23-11n-3e, abnd 5091 ft.

OKLAHOMA WILDCATS

Garfield County—Failure: W. E. Anderson's Braithwaite 1, nw nw ne 8-20n-3w, abnd 4601 ft.

Garvin County — Failure: Sinclair Prairie's Ackerman 1, nw se se 16-3n-3e, Simp 1812 ft, McLish 1947 ft, abnd 2400 ft.

Pottawatomie County — Failure: Wood Oil Co.'s McPherson 1, se nw ne 9-6n-3e, abnd 4212 ft.

Stephens County—Failure: T. H. McCasland's Mitchell 1, ne ne nw 22-1n-9w, Base Pont. 1880 ft, Limey sd 2488-2500 ft, Arb 2547 ft, abnd 2600 ft.

Tillman County—Failure: Texas Co.'s Taylor 1, se se ne 36-2s-18w, Canyon (ORD), 1750 gals acid 2982-3040 ft, swab 8 bbls oil, 75 bbls wtr, abnd 3040 ft.

WEST TEXAS WILDCATS

Cochran County—Failure: Stanolind's E. L. Slaughter 1, 440 out nec lbr 49, Lge 101, Jeff Davis CSL sur, elev 3776 ft, brown li 3510 ft, San Andres 3782 ft, Glorietta 5190 ft, Clear Fork (Nairn - Lubbock pool zone) 5800 ft, Tubb sd 6240 ft, Wichita-Albany 7000 ft, Wolfcamp 8358 ft, white dolomite 8390 ft, Ellenburger 10,383 ft, granite 10,836 ft, abnd 10,839 ft.

Crockett County—Failure: Ben Banner et al's L. B. Cox Jr. 1, 4924 snl 1246 ewl I&GN Ry. 29½, blk 2, elev 2232 ft, abnd 2002 ft.

Ector County—Failure: Texas Co.'s T. P. Land Trust 1-B, c se se T&P Ry. 31, blk 45, T-1-S, elev 3147 ft, Yates 2675 ft, San Andres 4100 ft, Glorietta 5160 ft, Tubb 6150 ft, Wolfcamp 7610 ft, detrital 7840 ft, Devonian chert 8095 ft, Silurian 8725 ft, abnd 9339 ft.

Howard County—Failure: Hunt Oil Co.'s Wasson 1, c sw sw T&P Ry. 19, blk 29, T-1-N, elev 2274 ft, anhy 685 ft, salt 925-1590 ft, Yates 1630 ft, San Andres 2086 ft, Glorietta 2850 ft, abnd 4640 ft.

Midland County—Failure: Seaboard Oil Co.-Standard of Tex.'s Fasken 1, c sw ne T&P Ry. 7, blk 36, T-2-S, elev 2675 ft, anhy 1500 ft, Yates 2340 ft, 1st li 3650 ft, abnd 5004 ft.

Pecos County—Failure: G. F. Aldrich et al's Crockett-Sun 1, 330 fr sw&sel of H&TC Ry. 26, blk 2, elev 2371 ft, Yates 1040 ft, abnd 2305 ft.

WEST CENTRAL TEXAS WILDCATS

Coleman County—Failure: Gilmore Oil Co.'s Joyce 1, 650 snl 2658 wel of 638-ac tr, Jas. Greenwood sur 304, elev 2105 ft, abnd 3655 ft.

Jones County—Failure: R. H. Roark-L. F. Hooker's Myatt 1, 1905 nsl 2627 ewl T&P Ry. 1, blk 15, abnd 1780 ft.

Taylor County—Failure: Republic Nat. Gas Co.'s Henslee 1, 330 nsl 2510 wel of J. A. Nabors sur 10, abnd 2752 ft.

SOUTH CENTRAL TEXAS WILDCATS

Atascosa County—Failure: Gulf's Ada Tom 1, 660 fr sel 1980 fr nel John Benson sur 148, on 1515.9-ac lse, abnd 10,528 ft.

Medina County—Failure: John I. Moore's A. J. Wurzbach 1, 333 fr wl 990 fr sl 420-ac tr, sect 37½, Juana Delgado sur 1, abnd 3194 ft.

SOUTHWEST TEXAS WILDCATS

Starr County—Failures: Coastal Refineries-Henshaw Bros.' Yndalecio Sanchez 1, 1320 e of m/wly/wl 2448 n of m/sly/sl sur 544, 640-ac lse, elev 370.5 ft, ssg 4922-5004 ft, abnd 5023 ft.

K. D. Owen-P. R. Rutherford's Mrs. B. A. Pierce 1, 467 fr sl 1266 fr wl 292 fr el of tr 12 on 40-ac unit, pore 93, abnd 4215 ft.

Webb County—Failure: R. F. Schoolfield's J. C. Martin 1, 330 fr nwl 1650 fr nel SK&K sur 139 and 480-ac lse, elev 881.5 ft, abnd 2371 ft.

LOWER TEXAS COAST WILDCATS

LaSalle County — Failure: Quintana Pet. Corp.'s South Texas Synd. 1-F, 750 fr n&el H&GN sect 76 on 96,000-ac lse, abnd 6640 ft.

Jackson County—Failure: Butcher-Arthur's Andrew Lorenzen 1-B, 330 fr nwl 990 fr swl e½ se¼ lot 5 John J. Linn sur, 238.8-ac lse, abnd 6920 ft.

Victoria County—Failure: Butcher-Arthur-Taylor Ref. Co.'s M. H. Williams et al 1, 230 fr nel 1493-ac lse 330 fr nwl lse and Fulgencio Buene sur, elev 112.2 ft, abnd 4219 ft.

UPPER TEXAS COAST WILDCATS

Brazoria County—Failure: G. S. Hinkle's H. L. Trammell 1, 660 fr sl 330 fr el tr 29, on 40-ac unit, 151.5-ac lse, David Talley sur, abnd 6677 ft.

Colorado County — Rock Island Discovery: Sinclair Prairie's Felix Fehrenkamp 1, 5050 fr nl 1050 fr el sect 23 SA&MG sur, 610-ac lse, perf 9678-95 ft, flow 6,000,000 gas, 25 bbls cond, ¼-in, tp 2525 lbs, td 11,000 ft.

UPPER TEXAS COAST NEW PAY TESTS

Harris County—Pierce Junction Deep Failure: Gulf's C. S. Settegast et al 1, 1043.3 fr nl 777.5 fr wl Jos. Kopman sur, 320.36-ac lse, elev 55 ft, top salt 10,718 ft, turned to geophysical dept, abnd 10,748 ft.

Montgomery County—Pinehurst Discovery: Pan American's L. E. Posey 1, 467 fr nel 541.5 fr swl 330 fr sel 40-ac unit in nwc 154.8-ac lse, J. B. Richards sur, 4030 e&n of La Gloria's Grogan 1, gas-cond well, dual comp. Wilcox 8365 ft, perf 11,002-086 ft, flow 288 bbls 53.2-gr, ¼-in, tp 2300 lbs, gor 11,118/1; perf 9564-87 and 9592-9622 ft, flow 75 bbls 60.2-gr, ¼-in, cp 1400 lbs, gor 24.160/1, td 11,820 ft.

NORTH TEXAS WILDCATS

Archer County—Failures: Cain & Neal Dr. Co.'s Black 1, 1200 out nwc of Allison Armes sur A-5, abnd 1322 ft.

Staley Oil Co.'s Burt Lowery 1, 1082 snl 150 ewl of w 60-ac of blk 50, J. W. Harris subdvn, 1468 ft.

C. L. Abercrombie-Frank Wood's Abercrombie 1, 750 out sec blk 82, J. W. Harris subdvn, abnd 1390 ft.

Clay County—Failures: Fain-McGaha-Drilling & Exploration Co.'s Weist 1, 660 out nwc lot 78, sect 14, Montagie CSL sur, elev 969 ft, Ellenburger 5052 ft, abnd 5175 ft.

Stanolind's Cray 1-A, 515 nsl 400 wel of n½ TE&L Co. sect 2801, elev 1034 ft, Bend 6021 ft, Marble Falls 6233 ft, Barnett 6445 ft, Simpson 6755 ft, Ellenburger 6835 ft, abnd 7120 ft.

Cooke County — Failure: Kerlyn Oil Co.-Phillips' Norman 1, 2650 wel 2375 nsl of Joseph Bush sur A-107, elev 747 ft, Bruhlmeyer sd 2260 ft, Ellenburger 4538 ft, abnd 4541 ft.

Grayson County—Failure: Pure's Q. Little 1-A, 330 snl 330 wel of s 100-ac of J. Meyers sur A-1443, 1¾ mi sw Gordonville, deepest in district, elev 662 ft, dry Strawn sd 7445 ft, Ellenburger 9479 ft, abnd 9919 ft.

Throckmorton County — Failures: Bridwell Oil Co.'s Cook 2, 500 ft s&e of m/s/sec of C.I.R. sect 3, but in John D. Hardin sur A-269, abnd 850 ft.

Bridwell Oil Co.'s C. McKeichen 1, 150 nsl 900 wel of E. E. Hull sur A-2116, abnd 774 ft.

H. M. Kelleher-Timberlake's Herron 1, 1717 out nec of TE&L Co. sect 1906, abnd 851 ft.

Young County—Failure: R. J. Watson et

al's Choate 1-B, 150 out nwc of TE&L Co. sect 259, abnd 650 ft.

WESTERN CANADA WILDCATS

South Alberta Plains — Conrad Discovery: Mid Continent O&G-East Crest Oil's No. 1, lsd 2 8-6-15w4th, pump 250 bbls 27-gr oil fr Ellis, td 3158 ft.

Conrad Failures: Mid Continent O&G-East Crest Oil's No. 3, lsd 1 8-6-15w4th, Ellis 3154 ft, Madison 3179 ft, abnd 3181 ft.

Empire Petroleums' Conrad 1, lsd 12 16-6-15w4th, Ellis 3142 ft, Madison 3161 ft, abnd 3163 ft.

California-Standard Co.'s Conrad-Province 71-36D, lsd 4 36-5-16w4th, abnd 3397 ft.

Foremost Failure: California-Standard's Foremost-Province 3, lsd 9 15-7-12w4th, abnd 3271 ft in Madison lime.

WESTERN CANADA OUTPOST

South Alberta Plains — Conrad Extension: California-Standard Co.'s Conrad-Province 71-4A, lsd 4 4-6-15w4th, pump 75 bbls 27-gr fr Ellis sd, td 2944½ ft.

WILDCAT STARTS

ALABAMA

Marengo County: A. W. Hutchings-Healy Co.'s Mary Wadlington Co. 1, c sw ne 18-12n-1e, 4000-ft test, ru.

ARKANSAS

Ashley County: Placid Oil Co.'s Crossett Lbr. Co. 1, c ne se 34-17s-9w, bldg roads.

Boone County: William S. King's Bert S. Lee Tr. 1, 660 ft w&e s of nec sw 24-18-22, lcn.

Desha County: W. S. Goodman's S. A. Banks Est. 1, nw se 32-9s-4w, bldg roads.

CALIFORNIA

Imperial County: Amerada's Timken 1, 28-16s-14e, rig up.

Kern County: British American's Portals 44-3, 3-30s-29e, lcn.

Continental's Porter 1, 28-30s-29e, lcn.

General Pet.'s Diana 1, 15-28s-28e, lcn.

Golden Bear Oil Co.'s 1, 32-27s-27e, lcn.

Independent Exploration Co.'s Poso Creek 106, 33-27s-27e, lcn.

Wm. G. McAllister's McCalden et al 1, 26-25s-18e, spud.

Miller, York & Claire's Koford 1, 24-28s-28e, lcn.

Pacific Oil & Gas Dev. Corp.'s C.C.M.O. 114, 20-24s-18e, lcn.

Richfield's Lawson-Bennett 1, 26-30-29, rig up.

Rothschild Oil Co.'s Movious 1, 10-28s-27e, rig up.

Orange County: Barnhart-Morrow Consolidated's Meyers 1, 18-6s-10w, lcn.

San Bernardino County: Chino Hills Oil Co.'s Kraemer-Backs 3, 33-2s-8w, rig up.

San Joaquin County: Shell's Wright 1, 32-2s-6e, lcn.

Santa Barbara County: Bel-Air Oil Co.'s Price 2, 17-18n-32w, lcn.

FLORIDA

Gulf County: Pure's St. Joe Paper Co. 1, swc 10-7s-9w, ru.

ILLINOIS

Clay County: Ryan Oil Co.'s Walker 1, ne ne sw 17-2n-6e, lcn.

Crawford County: C. H. Parriott et al's Fritchie 1, nw ne nw 36-5n-12w, lcn.

Clinton County: Carlston & Franseen's Swagler 1, sw sw nw 10-2n-1w, lcn.

Effingham County: J. D. Dunbar et al's Goechner 1, ne nw se 19-7n-7e, dr.

Jefferson County: C. E. Brehm's Dinwiddle 1, nw se nw 8-2s-2e, lcn.

Richland County: Olds Oil Co. et al's Warner 1, se se sw 1-3n-11w, lcn.

Wayne County: Robinson & Puckett's Malt 1-B, sw se ne 32-1n-8e, lcn.

White County: Herndon Drlg. Co.'s Brown 1, se se nw 11-5s-10e, dr.

Jarvis Bros.-Marcell's Hoskins 1, nw nw sw 31-6s-9e, lcn.

INDIANA

Dubois County: Elden Hayden's Lampert 1, sw nw nw 7-2s-4w, lcn.

Gibson County: E. L. Shoudy's Kuester 1, se ne ne 26-2s-10w, lcn.

Jasper County: Joseph Minneci's Jacobsen 1, se nw ne 33-29n-5e, lcn.

Knox County: Austin Reed's Crowder 1, sw sw sw 26-5n-10w, lcn.

Perry County: Karl Michel's Wanninger 1, se se se 12-6s-3w, lcn.

Pulaski County: H. W. Elmore's Rhodes 1, ne ne ne 36-29n-4e, lcn.

KANSAS

Rush County: Vickers-B&R Drlg. Co.'s Zuhckman 1, nw cor 20-16s-18w, lcn.

Saline County: J. Kronfeld et al's Lindell 1, ne ne se 34-16s-3w, woc.

Stafford County: C. R. Armstrong et al's Miller 1, c ne sw, dr.

KENTUCKY

Henderson County: Ashland O&R Co.'s Verona Coal Co. 1, 7-O-21, lcn.

Ohio County: J. F. Minuette's Ashley 1, 1-L-31, dr.

NORTH LOUISIANA

Claiborne Parish: Hunt Oil Co.'s W. T. Owens 1, 1980 n 660 w of sec 15-23-7w, 40-ac unit, 5500-ft test.

SOUTH LOUISIANA

Lafourche Parish: California Co.'s Delta Farms 2-1, start swc sect 60 go n 1° 00 mins w 4661 th e 4711 to lcn in 60-17s-21e, 12,000-ft test.

MICHIGAN

Alcona County: J. H. Conant's Burton 1, nw nw sw 24-26n-8e, lcn.

Arenac County: Frank Roush's State 1, se se se 21-20n-6e, dr.

Montcalm County: Allegan Pipe & Supply Co.'s Keeler 1, se nw ne 2-10n-6w, rig.

Ottawa County: P. K. Degenther's Boerman 1, nw sw nw 35-5n-14w, lcn.

Van Buren County: Harris & Fortney's Pease 1, c ne 9-2s-13w, rig.

MISSISSIPPI

Attala County: Shell's H. H. Wheeless 1, nec 5-14n-9e, lcn.

Claiborne County: Sun's B. D. Segrest 1, se ne 7-10n-5e, lcn.

Scott County: Pan-American Prod. Co.'s School Land 1, c se se 16-5n-6e, lcn.

Yazoo County: Atlas O&R Co.'s Jones-Dixon 1, se 21-12n-3e, lcn.

NEW MEXICO

Lea County: Vickers Pet. Co.'s State-Shell 1, c ne nw 17-21s-34e, 4500-ft San Andres test.

OKLAHOMA

Creek County: L. B. Jackson's Keys 1, ne nw ne 11-17n-10e, rum.

Oklahoma County: Frank Russell's Boecking 1, sw se sw 10-11n-4w, lcn.

WEST TEXAS

Crane County: Magnolia's Mrs. H. H. Tucker 1-B, 1868 fr nel 330 fr nwl of H&TC Ry. 25, blk 1, 2¾ mi nw McKee pool, 7000-ft Ellenburger test.

Dickens County: Geo. P. Livermore's Bird 1 (owdd), c nw ne H&GN Ry. 288, blk 1, elev 2551 ft, San Angelo 2493 ft, otd 2602 ft, mim to dd to 8000 ft.

Martin County: Richfield Oil Corp.'s Stimson-Burley 1, c se nw T&P Ry. 11, blk 38, T-1-S, 5000-ft test.

Sterling County: Sunray Oil Corp.'s J. L. Glass 1, ne ne nw H&TC Ry. 31, blk 22, 3200-ft test.

Terrell County: Robt. E. Freeman et al's L. R. Barksdale 1, c nw ne GH&SA Ry. 50, blk A-2, 4000-ft test.

WEST CENTRAL TEXAS

Coleman County: C. P. (Pete) Burton et al's C. J. Fine 1, 330 out nec of 320-ac tr, 330 snl 2500 wel of N. B. Waters sur 697, 3400-ft rotary test.

Jones County: Harry Hines and B. H. Hilburn's John Sayles 1, 330 out sec subdvn 15, Robt. Smith sur 192, 2500-ft cable test.

Palo Pinto County: Homer W. Snowden et al's Seaman Est. 2, 660 snl 1320 wel sect 5, C.B.&C.N. Ry. Sur A-1030, lcn.

SOUTH CENTRAL TEXAS

Atascosa County: F. A. Callery's Ruth D. Davis 1, 467 fr w&sl 553-ac lse, Jose A. Navarro sur, lcn.

Wilson County: Quintana Pet. Corp.'s Annie L. Moore 1-A, 106 s of well 1, 125-ac lse, David O. Warren lse, dr 1500 ft.

SOUTHWEST TEXAS

Duval County: Argo Oil Corp.'s Mrs. Annie M. Bagnall, 330 fr nw&sel H&W sur 249 on 1120-ac lse, 5300-ft test.

Edwin B. Cox-Jake L. Hamon's Clara Driscoll 3, 1320 fr el 330 fr sl sect 56, Santa Rosalis Gr, sect 55, 3120-ac lse, elev 568.1 ft, 3200-ft test.

Starr County: Glenda Oil Co.'s F. S. Guerra 1, 497 fr sel midway between ne&swl lot 17 on porc 109-111, lot 17 Clark subn, tr 5, Salinas part, 2000-ft test, spud.

Sun's S. Cantu et al 1, 467 fr n&wl tr 2, porc 39-40, 285.8-ac lse, elev 348 ft, 7500-ft test.

Zapata County: Dulup Oil Co.'s San Juan 7, 467 fr sel 190 fr nel blk 8 on 800-ac lse,

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Fig. A-134

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FOR SALE

■ FOR SALE: PA-100 International motor in A-1 condition. Also TXO Hercules motor, rebuilt and reconditioned good as new and still in factory. Also new TXA Hercules block with all necessary parts to rebuild this motor. P. O. Box 247, Owensboro, Ky.

■ One practically new Model FDM Franks Slim Hole or Shallow production Portable Unitized Drilling Unit, mounted on large tandem truck, with all necessary drilling equipment, ready to put to work. Will sell for 80% of actual cost. Box 572, Odessa, Texas.

■ FOR SALE: Complete well servicing outfit, Jumbo "C" Fort Worth Spudder, 3200 ft Cable and Sand Line, 3 Pipe Spears, 3 Sand Pumps, Stem, Fishing and Drilling Jars, Sockets, Several Small Tools, Steel Tool Box, New Fairbanks Light Plant, Machine running and in good condition. Frank W. Williams, Freer, Texas, Box 205, Ph. 30.

■ FOR SALE: Rotary Steam Drill Outfit—recently completed 9300 ft. hole using 3½" Drill Pipe—Good condition. National Supply Construction Corporation, Fort Worth, Texas.

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■ FOR SALE: Complete Rotary Power Rig with good 96' steel derrick. Rig capable of drilling 4000'. Now in operation. Glad to furnish complete description and inventory or to advise where rig can be inspected. A good buy. If interested, Address: Box 32, c/o The Oil Weekly, Houston Texas.

■ FOR SALE: 1 Complete Compressor Plant consisting of 3—90 H.P. Horizontal Direct connected Clark Brothers Compressors with high or low pressure cylinders (can be used in tandem) with all necessary auxiliary equipment, meters, gauges, circulating tanks and pumps, etc. Gas or air lift equipment. Also: 1—Model 47 A-012 Continental-Fairbanks 100 H.P. Twin Cylinder Gas Engine with 4½ "T" straightway clutch with 16" outboard bearing, 11 V-Belt Pulley, F-M 3 H.P., Type Z, Style C, Gas Engine, 3" x 3¼" F-M Type E Compressor, 125 H.P. C.G.P. Continental-Falk geared power, 31.9—1 Ratio, 20 S.P.M., 36" stroke. Capacity 20 3000 Ft. Wells—2" tubing. All this equipment in operation. If interested contact Livermore Development Corporation, 10th Street & Avenue K, Lubbock, Texas.

FOR SALE: Three light steam rotary rigs, capable of drilling 3,500'; one Fairbanks-Morse powered rotary rig having 8" Johnson drawworks, capable of drilling 5,000'. All located in Oklahoma Panhandle gas field. If interested inquire The Clay Brothers Drilling Company, Inc., 1804 Fair Building, Fort Worth 2, Texas.

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■ Driller, when you want a sizable lease 15/16 free for completed well first year, let us know. John H. Smith, 406 First Natl. Bank Bldg., Longview, Texas.

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■ Wanted by a consulting geophysical organization, Petroleum Engineers with Hayward Mud-logging experience or its equivalent. Immediate openings in Venezuela. Excellent opportunity for advancement to managerial positions throughout the world. Address: Box 36, c/o The Oil Weekly, Houston, Texas.

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Metallurgist

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by one of largest oil tool manufacturers in Southern California. Specify which position you are applying for. Send complete data about yourself in first letter. Fine openings for right men. Salary open. Address: Box 28, c/o The Oil Weekly, Houston, Texas.

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■ Petroleum Engineer, 25, single, draft deferred, B.S. 1942 in petroleum engineering desires position in reservoir engineering department of oil company. Address: Box 29, c/o The Oil Weekly, Houston, Texas.

■ JOB WANTED: Practical engineer. Experienced production, drilling, lease maintenance, gas-distillate and oil in responsible position 8 years; 3 years mechanical draftsman, tool, piping, equipment, design, layout, detail; age 40, married. Houston references. Either field work or as draftsman with Oil or Special Tool Service Company. Will be in Houston last week in May. Comply with W.L.B. regulations. Address: Box 30, c/o The Oil Weekly, Houston, Texas.

■ With Contractor or Independent—Man with ten years supervisory experience office management, purchases, procedures, cost controls and bids, oilfield transportation and construction. Experienced in South Louisiana and Mississippi operations. Address: Box 31, c/o The Oil Weekly, Houston, Texas.

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■ FUR TRAPPING LANDS WANTED. Reliable Fur Merchant wants to lease, or will operate and supervise for owner muskrat trapping lands, long or short term basis. Write George W. Falgout, 308-310 Gravier Street, New Orleans 12, La.

■ Submit your drilling deals for our investigation. We are in position to finance a few good ones. Harry Culver, Petroleum Bldg., Oklahoma City, Okla.

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■ Desirous of purchasing one or two Askania Vertical Magnetometers, new or old model. Address: Box 25, c/o The Oil Weekly, Houston, Texas.

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ADVERTISING RATES

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Trading Post Section, The Oil Weekly
P. O. Box 2608 Houston 1, Texas

Ramirez et al 1, 1549 fr sel 1740.2 fr nel sur 2500-ft test.

LOWER TEXAS COAST

Goliad County: W. C. McBride's August Kenne 1, 467 fr nw&swl 160-ac lse, J. W. Bergen sur, 8000-ft test.

Jackson County: Humble's O. S. York et al 1, 467 fr se&wl 223.3-ac lse, W. D. Sutherland sur, 7500-ft test.

H. J. Porter's Joe Volkmer 1, 1850 fr nel 330 fr sel 134.6-ac lse, Tacitus Clay sur, 2600-ft test.

Salt Dome Oil Corp.'s S. G. Drushell et al 1, 330 fr ne&nwl 622-ac lse, Carlos Lasso sur, 6700-ft test.

Lavaca County: W. S. McDowell, Tr.'s John Muhlstein 1, 660 fr sel 1276½ fr swl 124-ac lse, G. W. & W. H. Scott Lge, lcn.

San Patricio County: Bridwell Oil Co.'s Bertha C. Willmann 1-A, 330 fr se&swl 160-ac lse, Delgado Gr, 1275 nw of well 1, elev 129 ft, 5250-ft test.

Southern Minerals Corp.'s Katherine Clifton 1, 467 sw of nel 400 se of nel of 2625.7-ac lse, M. P. J. & N. Delgado Gr, 5500-ft test, run.

Plymouth Oil Co.'s Ruth Patrick Pittman 1, 330 fr el 1650 fr nl of sect 7 Taft Farm Lds, 2nd sbdn sect 7 200-ac lse, lot 5, 7500-ft test.

Victoria County: F. A. Gillespie & Sons Co.'s J. W. Ragsdale 1, 330 fr nwl 660 fr nel 180-ac lse, Fernando de Leon sur, 6800-ft test.

UPPER TEXAS COAST

Brazoria County: General Crude's Geo. H. Bingham et al 1, 9000 fr el 830 fr nl Francois Bingham sur 13 830 s of sl of Ft. Bend County line, 615-ac lse, Juliff area, 8500-ft test.

Ft. Bend County: Danciger O&R Co.'s Theodor Meir 1, 330 fr el 1000 fr sl 207.3-ac lse, 1700 fr nl 330 fr el H. N. Cleveland sur, Nash Dome area, 7500-ft test.

Gulf's T. W. Davis 79, start n cor Michael Young sur go 6223 sw alg nwl 859.2 se at ra 3330 n&e of Davis 46, Big Creek outpost, elev 75 ft, 8000-ft test.

Harris County: Lenoir M. Josey's Lenoir M. Josey 1-A, 1250 n 330 w of sec sect 17 H&TC sur, 640-ac lse, 7500-ft test.

Liberty County: Glenn H. McCarthy's A. G. Blanke 1-A, 1150 fr nl 400 fr el 115.5-ac lse, 2500 n of sl Levi Barrow sur, lcn.

Matagorda County: United North & South Dev. Co.'s L. B. Stoddard et al 4-A, 4500 fr nl 6400 fr wl J. C. Keller sur, 13,650 n ne of company's Stoddard 1-A, 5578-ac lse, Buckeye area, lcn.

Orange County: Sun's Green Est. 1, 660 fr n&wl T&NO sur 34, 646.6-ac lse, elev 28 ft, Doty area, 8650-ft test.

Polk County: Pfiffner & Ryan's Caroline B. Doyle Heirs 1, 660 fr nw&nel 27-ac lse, A. Viesca 7 Lge Gr, Goodrich area, 2250 n of Trinity River, elev 105 ft, 7500-ft test.

EAST TEXAS BORDER COUNTIES

Nacogdoches County: Allen Whiteside's R. D. Smith 1, 170-ac lse, 2117 fr nl 330 ft fr wl of lse, Vital Flores sur, 6 mi fr Nacogdoches, 2000-ft test.

EAST TEXAS

Freestone County: Texas Co.'s E. B. Ham 1, 467 ewl 500 n of swl of 51½-ac tr, 535 fr se 2025 fr m/e/swl of R. Lawson sur, 3 mi e by s of Teague, Travis Peak test.

Nacogdoches County: Allan Whiteside et al's R. D. Smith 1, 2117 fr nw 330 fr nel of 170-ac tr, 3800 wel 3750 m/s/sl of Vital Flores sur, 6 mi e of Nacogdoches, 2000-ft test.

NORTH TEXAS

Archer County: Cain & Neal Drlg Co.'s D. H. Skinner 1, 150 snl 750 ewl of blk 20, John W. Harris subdvn, 1600-ft rotary test.

Kadane-Griffith Oil Co.'s J. J. Perkins 1, 1100 wel 1800 snl blk 134 John W. Harris subdvn, 1400-ft rotary test.

P. C. Burns et al's G. F. Parsons 1, 850 nsl 1350 ewl of E.L. Ry. Co. sur A-688, 1550-ft rotary test.

Cooke County: S. D. Johnson et al's W. T. Bonner 1, 150 out swc of 160-ac tr and A. Emanuel sur A-1196, 2000-ft rotary test.

Nu-Enamel Oil Operating Co.'s C. W. Pulte 1, 330 out nec of Thomas Carson sur A-203, 4500-ft rotary test.

Montague County: W. B. Omohundro et al's E. S. Johnson 1, 986 snl 1375 ewl of ne 174¼ ac of sect 6, Limestone CSL sur, 7200-ft Ellenburger test.

Throckmorton County: Bridwell Oil Co.'s J. F. Cook 3, 800 w 450 s of sec of E. E. Hull sur A-216, but in B. C. Riley sur A-1325, 1300-ft test.

Cochran & Cain's Herron 2, 1050 nsl 150 wel of nw¼ TE&L Co. sect 1607, 850-ft cable test.

WESTERN CANADA

South Alberta Plains—Conrad: California-Standard Co.'s Conrad Province 15-32B, se lsd 9 32-5-15w4th, rig.

California-Standard Co.'s Conrad-Province 15-35B, se lsd 9 35-5-15w4th, rig.

Mid Continent O&G-East Crest Oils' No. 5, nw lsd 2 8-6-15w4th, dr.

Central Alberta Plains—Bruderheim: Kitalta Oil's Bruderheim 1, nw lsd 5 20-55-20w4th, elev 2219 ft, dr.

SQUEAKS from the BULL WHEEL

Mystery Department

Sherlock, the famed detective, arrived on the scene of the crime.

"Zounds, Watson," said he, "this is more serious than I thought. This window is broken on both sides."

Lucky Strike

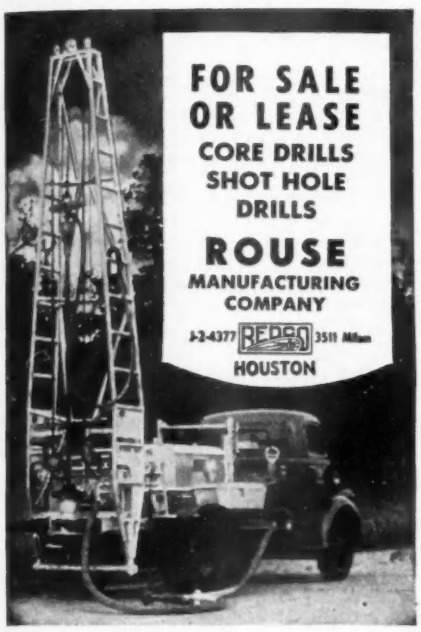
A motorist stopped at a lonely Ozarks filling station and tried to strike up a conversation with the attendant. "Well, we finally licked ol' Hitler," he observed.

"Hitler? Who's he?"

"Why he's the bum we had to lick before we could really get going on Hirohito."

"Hiro — Say, what're you talking about?"

"Oh, never mind, never mind. Just give me 20 gallons of gasoline, two full sets of tires and a couple of cartons of cigarettes."



HOW TO MAKE A LITTLE STEEL GO A LONG WAY

A 2", 6000 lb. test, ring joint flanged union weighs 54 lbs. . . . enough steel to make nearly five 2", 6000 lb. test, UNIBOLT Couplings! And UNIBOLT Couplings have a higher safety factor.

UNIBOLT
THE ONE BOLT COUPLING

THORNHILL-CRAVER COMPANY
HOUSTON

This Curious World

If you think money doesn't talk, just try to telephone without a nickel.

If all the girls who don't neck were gathered in one room, what in the dickens would you do with her?

Poet's Nook

They say there's microbes
In a kiss.
This rumor is most rife.
Come, lady dear, and make of me
An invalid for life.

Encore

I eat my peas with honey,
I've done it all my life.
It makes the peas taste funny,
But it keeps them on my knife.

Angler's Prayer

Lord, give me grace to catch a fish
so big that even I,
When talking of it afterwards,
Will never have to lie.

Says She to Her

"She dances with a decided jerk, doesn't she?"

"Yeah, isn't he?"

When Two Agree

Husband: Let's have some fun this evening."

Wife: "Okay, and please leave the light on in the hall if you get home before I do."

A Woman's Way

Paint 'em face,
File 'em nails,
Curl 'em hair,
Catch 'em males.

Smart Fellow

A little moron threw a beam from his flashlight on the ceiling and said to his companion: "Climb up the beam."

"Oh, no, I won't. When I get halfway up you'll turn the light out."

Tale of a Tater

Two Irish potatoes got married and before long they had a lil' Sweet Potato. When she grew up, she went to her mamma and told her "I want to marry Lowell Thomas." But mamma objected: "You can't do that. He's only a common tater."

Hobby

A city fellow who had just bought a farm was asked by a native what crop he expected to raise. Remembering what his wife had said about the city being no place for the children, he replied brightly. "Think I'll raise kids."

The farmer spat meditatively. "Around here, we look on that as a side line."

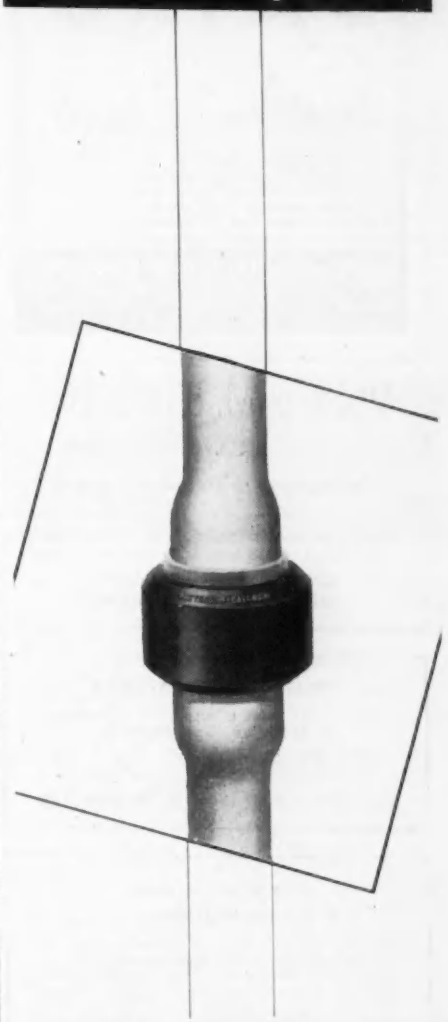
Naughty Boy

She giggled and said,
"Don't be vulgar, dear;
And tell the next one more softly
So people won't hear."

Short, Short Story

Ou wanta wide? Ou do? Hop in.
Ou wanta woo? Ou don't? Hop out.

"Best Bet Yet"



Cut Metal-to-Metal Contact

These oil-proof, insulating, wear-resistant, plastic tubing protectors are an integral part of the tubing collar. Made in all sizes, they prevent the metal-to-metal contact that causes many expensive "wet" jobs in pumping wells. Without this contact, the collars do not wear holes in the casing.

See Composite Catalog

Patterson-Ballagh TUBING PROTECTOR

LOS ANGELES 1 · HOUSTON 10 · NEW YORK 6

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BE SURE TO CHECK . . . .
TRADING POST SECTION
ON PAGE 106 OF THIS ISSUE

Because of the scarcity of certain types of new equipment and the fact that some operators may have a surplus of some items and a serious shortage of others, **this Used Equipment Forum** is performing a valuable service to operators in locating needed used materials or disposing of surpluses that may be needed by others.

MEN IN THE INDUSTRY NEWS

Dr. Joseph A. Sharpe has resigned as chief physicist of Stanolind Oil and Gas Company, Tulsa, to become vice president of C. H. Frost Gravimetric Surveys, Inc., Tulsa. He is a graduate of the University of Arizona and was instructor there two years. He studied at the University of Wisconsin where he installed and operated the Madison seismological station and held assistantships in physics, geology and geophysics. After post-graduate study at the Massachusetts Institute of Technology as Rockefeller Foundation fellow in geophysics, he became research seismologist in the Los Angeles Laboratory of the Western Geophysical Company and Stanolind Oil and Gas Company.

Dr. J. A. Sharpe

Dr. Sharpe holds memberships in the Society of Exploration Geophysicists, American Association of Petroleum Geologists, Tulsa Geological Society, American Institute of Mining and Metallurgical Engineers, American Geophysical Union, Seismological Society of America, American Physical Society, and American Mathematical Society.

Louis E. Whyte of Washington, D. C., has been appointed supervisor of the educational department of the Independent Natural Gas Association. Whyte has had 15 years experience in Washington with newspapers, trade journals and business information service organizations.

Dean D. Ault has joined the Westcott & Greis division of American Meter Company as field engineer, with headquarters at Houston. Ault served in the Navy in World War I. He is a graduate of the University of Arkansas, class of 1924, and of the Chicago Central Station Institute.

Alexander C. Nagle of New York has been elected a director and member of the Finance Committee of United States Steel Corporation, succeeding the late **Leon Fraser.** Nagle, who last month succeeded Fraser as president of the First National Bank of New York, has spent his entire business career with the bank. He was first employed in 1907.

An Apology

An announcement last week that Alfred L. Goeke has been named service manager of the Tulsa branch of Westinghouse Electric Supply Company unfortunately appeared in the "Deaths" column, for which THE OIL WEEKLY apologizes.

A. H. Mitchell, manager of the personnel and industrial relations department of The Carter Oil Company, has been elected a director of the company. assistant treasurer, has been made treasurer. Barnhill, **W. M. Barnhill,** with the company 25 years, had served 11 years as assistant treasurer. He succeeds **C. D. Mill,** New York City.

A. H. Mitchell

Mitchell became associated with Carter in February, 1927, and has worked as a roustabout, well tester, construction engineer, chief clerk and head of the personnel and industrial relations department, a position he held since October, 1937.

Frank Boyd, general drilling superintendent for The Union Oil Company with headquarters at Santa Fe Springs, California, has been named assistant manager of field operations. **Joe D. Robinson,** who has been division production superintendent at Santa Maria, California, is moving to Santa Fe Springs to fill Boyd's former position. Succeeding Robinson at Santa Maria is **W. O. Butler,** formerly district drilling foreman.

T. S. Peterson has been named assistant to **H. D. Collier,** president of Standard Oil Company of California. Peterson also is a vice president and director of the company.

J. L. Mathieu of Houston, vice president, Schlumberger Well Surveying Corporation, left Friday on a business trip to Mexico, Venezuela, and Trinidad.

A. K. Tyson of Houston, manager of the land department, southern region, Continental Oil Company, has completed an inspection tour of West Texas with the company's exploration committeee.

J. Gordon Jackson has been promoted to chief engineer of Eastman Oil Well Survey companies. He has just returned to Long Beach, California, company headquarters, after an extended tour of the oil producing areas in the United States. Jackson joined the Eastman organization in 1939 and has had experience in all departments of the company. He was graduated from the University of California, College of Engineering.

J. Gordon Jackson

MEN IN THE INDUSTRY NEWS

Ernest C. Low, general manager of sales for John A. Roebling's Sons Company, Trenton, New Jersey, has been named vice president in charge of sales. **John D. Thompson,** works manager, becomes vice president in charge of production; and **Charles M. Jones** is now vice president in charge of engineering. **Archibald W. Brown,** treasurer, has been elected a member of the board of directors.

Ernest C. Low

George B. Evans, general superintendent of Wagner Electric Company, St. Louis, has accepted appointment as an alternate industry member of the Seventh Regional War Labor Board.

John B. Stone, development chemist for Dowell Incorporated, Tulsa, addressed the Purchasing Agents Association of Tulsa on "The Use of Plastics for Remedial Work in Oil Wells."

H. K. Ihrig, manager of the technical service department of Kobe, Incorporated, at Oklahoma City, gave an illustrated talk on paraffin control and oil-well pumping by means of a hydraulic power system before the Mid-Continent Section of the American Society of Mechanical Engineers, Tulsa.

H. W. Shrap, metallurgist of Stoody Company, Whittier, California, addressed the Tulsa section of the American Welding Society on "Micro-Structure of Hard-Facing Alloys."

B. Franklin Williams, manager of the auditing-voucher section of the Sunray Oil Corporation, Tulsa, has been ordained a deacon in the Episcopal Church and has been appointed vicar of the Church of the Good Shepherd, Tulsa.

W. H. Haven has resigned from The Superior Oil Company and rejoined the Heydrick Mapping Company at Wichita Falls, Texas.

Weldon Cabaniss of Houston has resigned as business manager of athletics at Rice Institute, Houston, and will enter the oil business with **Lyle Cashion** in Laurel, Mississippi.

J. B. Ellzey has been promoted from store manager of Bethlehem Supply Company's Houma, Louisiana, store to district manager of the new Louisiana Gulf district with his office in the New Iberia store. **T. H. Salter,** formerly district manager for the entire area, will now be district manager for the Southeast Louisiana-Mississippi district with his office at Harvey.

A. H. De Friest, for several years vice president and director of marketing for General Petroleum Corporation, has been named assistant to the president of Socony-Vacuum Oil Company, **B. Brewster Jennings,** and will make his headquarters at 26 Broadway, New York City.

C. S. Beesemyer, a director of General Petroleum and former president of the Gilmore Oil Company, has been appointed vice president and director of marketing, to fill the post vacated by De Friest's promotion.

John C. Sample, who has been general sales manager, becomes general manager of the marketing department of General Petroleum. All appointments are effective June 1.

Nick Carter has been named manager of the Mid-Continent Supply Company's branch sales office in Suite 515-16 Union National Bank Building, Wichita, Kansas.

Dr. Robert E. Wilson, chairman of the board of the Standard Oil Company (Indiana) and of Pan American Petroleum and Transport Company, Inc., was elected a member of the board of directors of the Chase National Bank.

Denis Kemball-Cook, former assistant to the exploration manager of Shell Oil Company in Houston, has been transferred to Caracas, Venezuela, where he is general assistant to **John Louden** of the Caribbean Petroleum Company, a member of the Shell Group.

David E. Day, vice president of Richfield Oil Corporation, has been elected to the board of directors. He has been with the company since 1923, and is in charge of manufacturing and pipe lines.

Deaths

Edmund A. Doyle, consulting engineer for The Linde Air Products Company, and former president of the American Welding Society, died in New York City, May 4. He was 64 years old.

Lewis H. Thornton, 76, Allegany field oil operator, died May 9 in Rochester, New York. Thornton, whose home was in Wellsville, New York, was the first president of the New York State Oil Producers Association and honorary president at the time of his death. Previous to his entry into the oil business, he was city editor of the Wellsville Daily Reporter and then as publisher of the Belmont, New York, Dispatch and later the Cuba, New York, Patriot. He wrote many historical articles, including several histories of the New York state oil industry.

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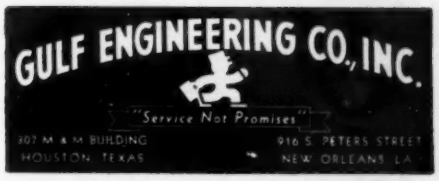


PAGES 3079 THRU 3098 IN THE COMPOSITE CATALOG

NEW EQUIPMENT . . . LITERATURE

1— Plug Gauge

United Precision Products Company, 3524 W. Belmont Avenue, Chicago 18, Illinois, announces an improvement in cylindrical plug gauges which replaces metal collets by colored plastic collets, green for the "Go" plug and red for the "No Go" plug.

It is claimed that a number of advantages are gained through use of the plastic: The plastic collet grips the plug with a much more secure hold. It cannot be twisted out by vise or wrench. There is no slipping of the plug. It is easily removed by use of a drift. The plastic does away with scratching and marring of the plug, preserving its accuracy much longer. Weight is reduced, making an even better balancing of the gauge.

Since insulation is an important factor to be reckoned with in the use of gauges in many places, the plastic collets protect the gauge against electrical effects due to dielectric qualities of plastic.

2—Magnesium Anodes

Federated Metals Division, American Smelting and Refining Company, New York, has developed a magnesium alloy anode for cathodic protection of pipe lines and other buried metal structures.

Corrosion of buried metals caused by chemical action between the metal and the soil results in electric current flowing from the metal to the soil. Cathodic protection is a method of greatly retarding corrosion by supplying current from an external source of a magnitude sufficient to overcome the current flowing from the metal to the soil. The external source of the current may be batteries, generators, or expendable metal anodes. Tests and field installations indicate that a magnesium alloy containing a certain percentage of zinc and aluminum is most satisfactory. The driving voltage for magnesium against iron in an open circuit is approximately 1.0 volts.

Magnesium alloy anodes are now available with cast-in lead wires in the following shapes: 4 inches in diameter x 18 inches long, weighing approximately 12 pounds; 4¼ x 4¼ inches square x 3 feet long, weighing approximately 40 pounds.

3—Swing Check Valves

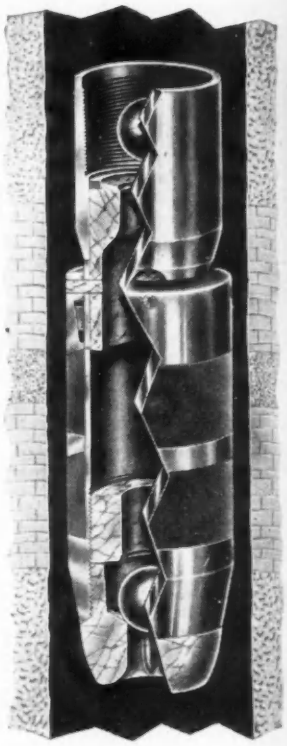
Darling Valve & Manufacturing Company, Williamsport, Pennsylvania, has added a series of Cast Steel Swing Check Valves designed for use in oil and gas pipe lines. These valves are available in 150, 300, and 600-pound series and in sizes from two to 12 inches, inclusive.

They are also available in various cast steel compositions. A choice of bronze or alloy corrosion resistant disc faces, seat rings, studs, clapper arms and pins for different services, provides for long life and easy operation. The valve disc, free to revolve, allows a different seating position at each closing, assuring uniform wear over the entire seating surface. Vertical seating surfaces permit sensitive action, yet without differential pressure the valve disc remains tightly seated as the clapper arm pin is set slightly back of the vertical seating surfaces. The seat rings are screwed into the body and can readily be replaced while the valve is in the line. Generous eliptical bodies provide excess area through the valves and assure full delivery of line capacities.

No. S-42 HC

4—Cementrol Shoe

Larkin Packer Company, 6200 Maple Avenue, St. Louis 14, Missouri, has announced the Cementrol Shoe, a device for eliminating damage to producing formations caused by infiltration of cement slurry.



The product is said to prevent the downward movement of cement below the casing shoe during the following cementing operations, thereby eliminating the possibility of cement sheathing the face of the formation.

The shoe, equipped with the Larkin Bakelite guide and valve assembly, acts as a conventional float shoe while casing is being run. When casing reaches cementing depth, a Bakelite ball is dropped and pumped slowly until it comes to rest in the seat of the internal Bakelite middle section of the shoe.

Pump pressure is continued after the ball has seated, and before a pressure of 300 pounds per square inch has been reached the internal Bakelite middle will have moved downward, forcing the external steel sleeve downward against the packing elements and expanding them firmly against the hole wall, thus packing off the casing on the outside. Pump pressure is continued until it reaches approximately 850 pounds per square inch, at which the pin shears and the Bakelite moves farther downward, opening side ports through which the well is cemented. Slips lock, preventing the external sleeve from moving upward, and the packer must remain expanded.

After cement has set, the Bakelite mechanisms are easily drilled out, and no cement is encountered below the shoe.

Use This Coupon for Additional Information

FOR YOUR CONVENIENCE: Check or circle the numbers identifying the information you want; mail this coupon to The Oil Weekly and your request will be promptly sent to the manufacturer. To avoid delay be sure to indicate your complete mailing address.

THE OIL WEEKLY
P. O. Box 2608, Houston 1, Texas, U.S.A.

Please have the manufacturers send me, without obligation, more information or literature on items checked below. (Numbers correspond to descriptive paragraphs as shown in May 21 issue of The Oil Weekly):

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16

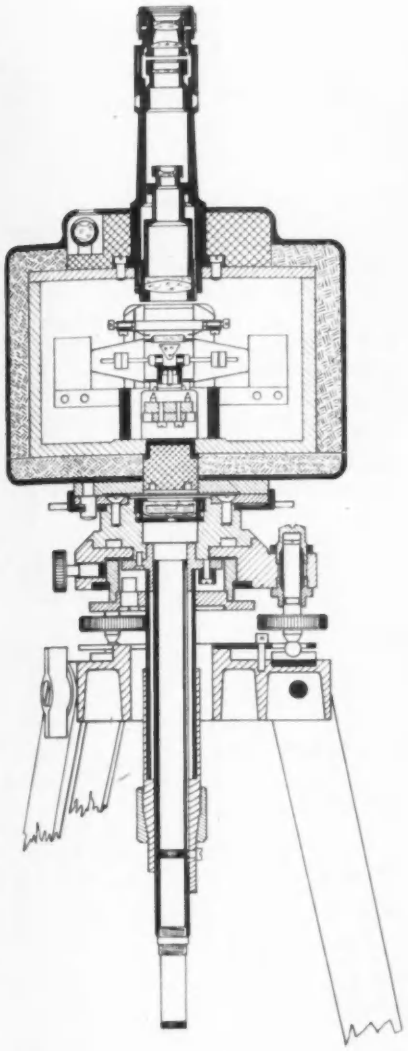
Company_____

Name_____ Title_____

Address or P. O. Box_____

City_____ State_____

(Print or type clearly name, company and address)



5—Magnetometers

Ruska Instrument Corporation, 4607 Montrose Boulevard, Houston, has developed a new group of magnetometers which are claimed to greatly improve the aspects of magnetic surveying.

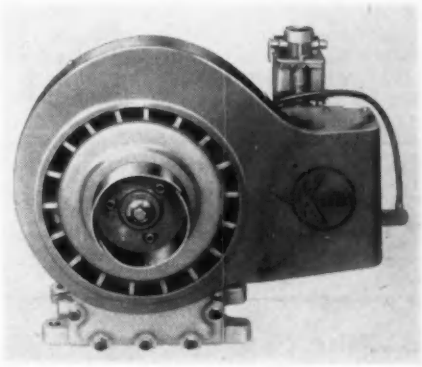
Features of these instruments include various mechanical improvements. Two new recording base station magnetometers especially are important since they eliminate the need of attendants, dark tents or extensive set-ups. These give a complete record of diurnal variations, time and temperature. At the same time the recording instrument permits visual observations at any time such is desired.

These instruments, it is claimed, remain accurate for a long time and operators can make necessary adjustments readily in the field.

6—All-Purpose Engine

Kinner Motors, Inc., Glendale, California, announces a five-horsepower, all-purpose, air-cooled engine.

Called the "Busy Bee," the Kinner model AB-3 is an air-cooled, four-cycle, L-head engine rated 5 horsepower at



2600 revolutions per minute but develops six horsepower at 3250 revolutions per minute. The single cylinder is horizontal and detachable, making maintenance easier. Bore is 2¾ inches, stroke 3 inches, displacement 17.8 cubic inches. The whole unit requires only 2.4 cubic feet of space, hence is compact.

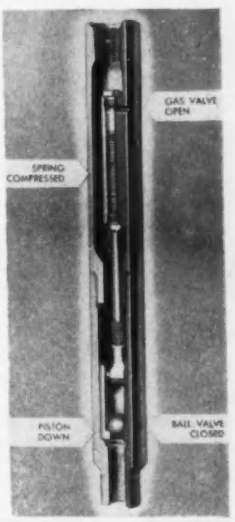
The "Busy Bee" is said to be the lightest engine on the market in its horsepower class. This is due to aluminum alloy used in crankcase, piston, head, and crankcase and rear cover.

Torque curve on the engine is practically flat, demonstrating its ability to "lug" under heaviest load conditions. Bearing surfaces are large, with bearing pressures kept low.

7—Surge Pump

Dresser Manufacturing Division, Bradford, Pennsylvania, announces the Baldwin-Dresser Surge Pump for distribution.

Depending upon field conditions, gas pressure, and well depth, field tests have shown that the ¾-inch size of the B-D Surge Pump can easily handle 30 to 40 barrels of water per day; the 1-inch size has a capacity of 80 to 100 barrels, while the 2-inch size can raise as much as 600 barrels each day.



Operation is simple and entirely automatic. To start the B-D Surge Pump requires only the opening of a small valve at the well head. When the gas valve is open, the water inlet at the bottom is closed. Gas from the casing enters the gas valve and utilizes the principle of the aerated siphon in step with a surge re-

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currently induced in the siphon line. Pressure in the column is reduced, expansion of the spring closes gas valve, the ball valve opens, and more liquid is admitted. This cycle repeats many times per minute, the number dependent on well depth and gas pressure. The gas flow is interrupted at the start of each liquid surge. The surge is trapped at its maximum height, and at that instant, the gas inlet is reopened .

By limiting the period of gas flow into the siphon tubing to the moment a maximum column of liquid is trapped in the tube above the Baldwin-Dresser Surge Pump, the velocity of the gas flow is retarded. This increases lifting efficiency by reducing frictional resistance between the fluid and tube. The lower gas velocity further increases efficiency by allowing more time for greater isothermic expansion of the gas before it finally escapes from the siphon line.

This simple, yet efficient, surge pump is said to operate at a remarkably low gas liquid ratio. The low ratio is uniform, showing almost no change as the liquid level in the well falls. Field tests have shown ratios as low as 127 cubic feet of gas per barrel of salt water pumped from a 950-foot well.

The B-D Surge Pump maintains lifting efficiency without lowering the siphon line as the liquid level falls, thereby permitting installation at a maximum high point in the siphon line (as high as 1/5 of total well depth).

Literature

8—Tractors

Caterpillar Tractor Company, Peoria 8, Illinois, has published a new bulletin, "Pipelining with Caterpillar."

The booklet's eight pages are filled with views of pipe line construction from the first clearing of the right-of-way to the final back-filling of the trenches.

9—Synthetic Rubber

Hycar Chemical Company, Akron 8, Ohio, has published a bulletin on synthetic rubber which gives detailed description of the various types, and indicates applications.

10—Pumps

Goulds Pumps, Seneca Falls, New York, has published a booklet entitled "Goulds Pumps at War." Amply illustrated, the booklet shows many applications of the pumps.

11—Gas Holders, Tanks

Stacey Brothers Gas Construction Company, Cincinnati, Ohio, has published a picture story of the fabrication and erection of gas holders, storage tanks, processing vessels, and other structures for the gas and petroleum industries, in bulletin No. G-45.

12—Pumps and Compressors

Written primarily for the practical operator of pumps or compressors, Audel's Pumps, Hydraulics, Air Compressors, compiled by Frank D. Graham and published by Theo. Audel & Co., New York, deals with design and operating problems in an elementary manner through the question-and-answer method and with many line drawings to illustrate the principles involved.

The book is divided into three parts, the first dealing with pumps and their application; the second with hydraulic physics; and the final portion with air compressors and allied equipment. An exhaustive index, covering 24 pages, enables the reader to find the portion of the book applicable to his problems.

Use the Coupon

For additional information on these products see coupon on page 110.

13—Valves

Merco Nordstrom Valve Company, 400 N. Lexington Avenue, Pittsburgh 8, Pennsylvania, has issued a manual designed to guide users of Nordstrom valves in the proper methods and routine of lubricating plug valves.

The bulletin, V-126, illustrates each type of valve, revealing the operation and gives specific directions how to lubricate, when, and the type of lubricant best suited for specific services. Twenty-four groups of valve parts are illustrated so that the user may select replacements. Grease gun lubrication is also discussed.

Stewart-Warner Corporation Receives Ninth "E" Award

A "three-star" Army-Navy "E" Award for excellence in war production has been granted Division One, Stewart-Warner Corporation.

This is the ninth Army-Navy "E" Award to be received by a plant of Stewart-Warner, and the fourth by Division One, 1826 Diversey Parkway, Chicago. The Diversey plant is now entitled to fly its original Army-Navy "E" flag with three white stars, indicating three added awards received since the first one, granted in September, 1942.

The Indianapolis plant of Stewart-Warner has received the "E" Award three times, while the company's Green River Ordnance Plant, Dixon, Illinois, has had two awards.

Five Distributors Named By International Derrick

International Derrick & Equipment Company has announced five new distributors for its products and services, including American Pipe & Supply Company, Bovaird Supply Company, Howard Supply Company, Mid-Continent Supply Company, and Republic Supply Company.

These will add more than 100 additional sources for IDECO equipment in Colorado, Wyoming, Montana, New Mexico, Kansas, Oklahoma, Texas, Louisiana, Mississippi, Arkansas, Illinois, Michigan, and California.

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*Oil City Brass Works ---- 102
*Oil Well Supply Co. ---- 73
Owen Tool Co. ---- 93
*Pacific Pumps, Inc. ---- 11
*The Parkersburg Rig & Reel Co. ---- 24-25
*Patterson-Ballagh Corp. ---- 58 and 107
*Patterson Steel Co. ---- 111
*Pelican Well Tool & Supply Co. ---- 94
*Penberthy Injector Co. ---- 70
*Pittsburgh Equitable Meter Co. ---- 1 Cover
*J. P. Ratigan ---- 10
*Rector Well Equipment Co. ---- 72
Republic Steel Corp. ---- 95
*John A. Roebling's Sons Co. ---- 20-21
Roosevelt Hotel ---- 105
Rouse Manufacturing Co. ---- 107
Ruska Instrument Co. ---- 92
*Security Engineering Co. ---- 23
Seismic Explorations, Inc. ---- 13
Sinclair Refining Co. ---- 32
Southern Engine & Pump Co. ---- 93
Southwest Machinery Co. ---- 76
*Standco Brake Lining Co. ---- 60
Sterling Engine Co. ---- 17
*Sterling Machinery Corp. ---- 72
Sunshine Iron Works ---- 90
*The Thermoid Co. ---- 2 Cover
*Thornhill-Craver Co. ---- 107
Trading Post Section ---- 106
*Tretolite Co. ---- 91
*Tyson Bearing Corp. ---- 31
*The Union Chain & Manufacturing Co. ---- 93
*United States Rubber Co. ---- 18
United States Steel Corp. ---- 73
*Universal Engineering Co. ---- 100
Walter Motor Truck Co. ---- 27
*Wheeling Machine Products Co. ---- 100
*Wickwire Spencer Steel Co. ---- 6
*Wilson Manufacturing Co. ---- 5
*Wilson Supply Co. ---- 19
*Wisconsin Motor Corp. ---- 96
*Worthington Pump & Machinery Corp. ---- 15
The Youngstown Sheet & Tube Co. ---- 51